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European Network of AI Excellence Centres

Research Nodes for Artificial Intelligence in Europe

Catalogue 2022

Local AI Opportunities for
Students, Scientists and Enterprises

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 951847. ELISE works in close collaboration with the ELLIS Society (European Laboratory for Learning and Intelligent Systems).

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Development Team

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SPINVERSE

Spinverse is a partner in the ELISE project and developed this catalogue to bring AI research and industry together. Spinverse is the Nordic leader in innovation consulting, helping customers grow and solve global challenges with innovations. The company's experts are committed to support customers to secure public funding, find partners for collaboration, and make an impact with ground-breaking projects. Digitalisation and sustainability are driving the need for Spinverse customers to renew and grow through innovation. These customers range from the most disruptive large enterprises to smartest growth companies throughout Europe. www.spinverse.com

Scientists supporting the pilot
Acknowledgements

- Prof. **Ivona BRANDIĆ**
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  Delft University of Technology

Scientists supporting the pilot
Acknowledgements

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  University of Malta, Malta

* A special acknowledgement for providing the first full sample.

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European Network of AI Excellence Centres

Enhanced academia and industry collaboration in Europe

Coordinated by Aalto University, Finland with 23 partners from 11 European countries

- 14 AOs
- 1 RTO
- 6 SMEs
- 2 LEs

Objectives

Increase Europe's competitiveness in ML and AI by:

- Building a network of excellence
- Strengthening technical capabilities
- Improving performance in deployment
- Aligning with social interest
- Improving research collaborations and by
- Engagement of industry and society

Activities that bring research and industry closer:

- Event participation, Interviews, RTOs booklet, Statistics, Newsletters

Contact information and Social media:

www.elise-ai.eu
www.ellis.eu

@ai_elise

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 951847. Elise works on top of **ELLIS Society** (European Laboratory for Learning and Intelligent Systems) which was originally founded to advance research breakthroughs in AI in Europe.

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Introduction to AI nodes catalogue

Target groups.
The catalogue targets the following groups:
- Organizations looking for academia partners for new collaborative projects
- New students and researchers looking for their next destinations.

Timeline.
- January 2022, start of preparations
- February – April 2022, data collection
- June 2022, pilot phase with around 20 AI nodes
- July 2022, data collection (cont.)
- August – September 2022, data preparation
- September 2022, first draft released for contributors review and data completion
- October – November 2022, finalization of catalogue
- December 2022 – February 2023, ELISE board approval
- March 2023, first release
- September 2023, additional required input: ELLIS units. These are marked with the ELLIS logo.
- December 2023, final release.

Introduction to AI nodes catalogue

Data collection.*

Criteria to be included in the catalogue:

- The node belongs to academia (incl. research institutes)
- The term “AI” was included in the name of the node (this criterion was relaxed later in the process)
- The node has a website with enough information, e.g., contact, topics, team, publications, projects, etc.

We use Google for the search. We use the following search terms:

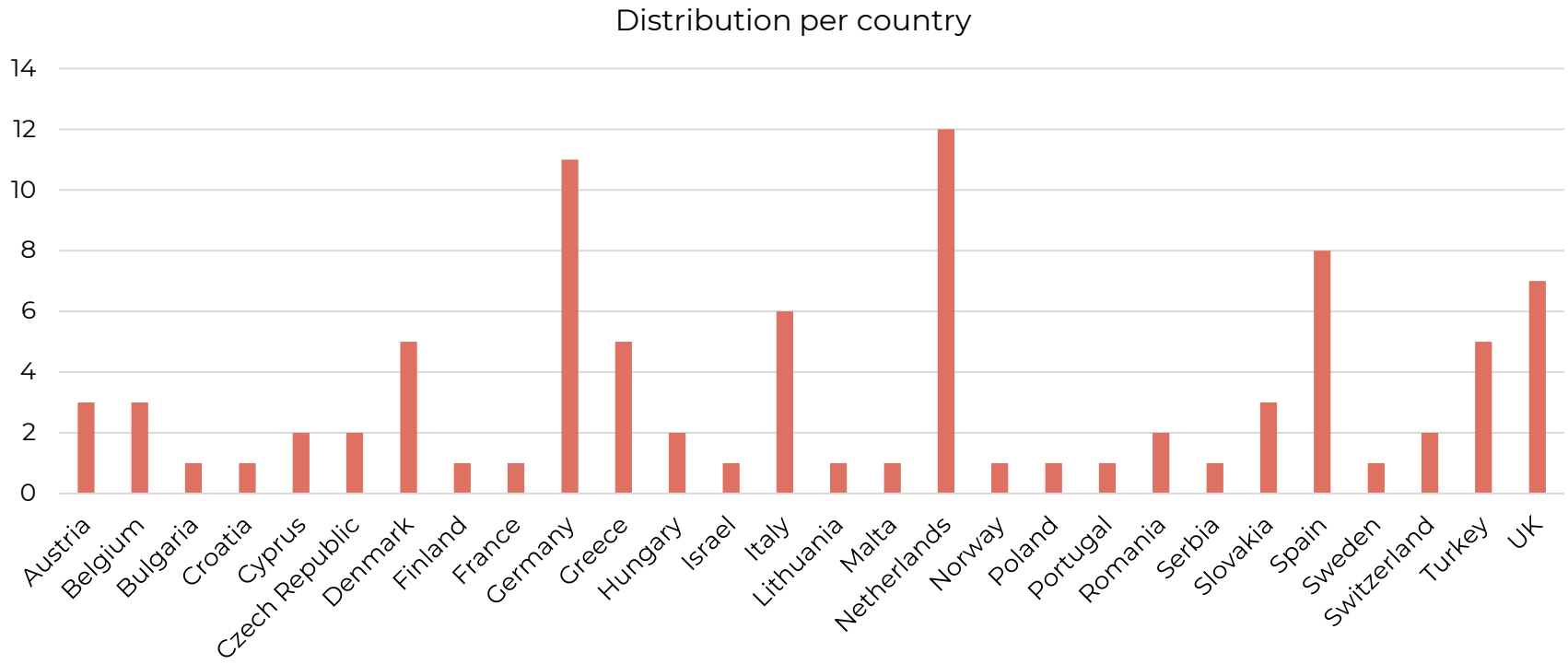
- Search by country. For all member states and associated countries, we use “site:xx”
- Search by topic in title. We use “allintitle: AI” and “allintitle: “artificial intelligence””
- Search by type of node in title. We added the following terms (one at the time), “team”, “group”, “laboratory”, “centre”, “center”, “department”, “institute”, etc.

Success rate.

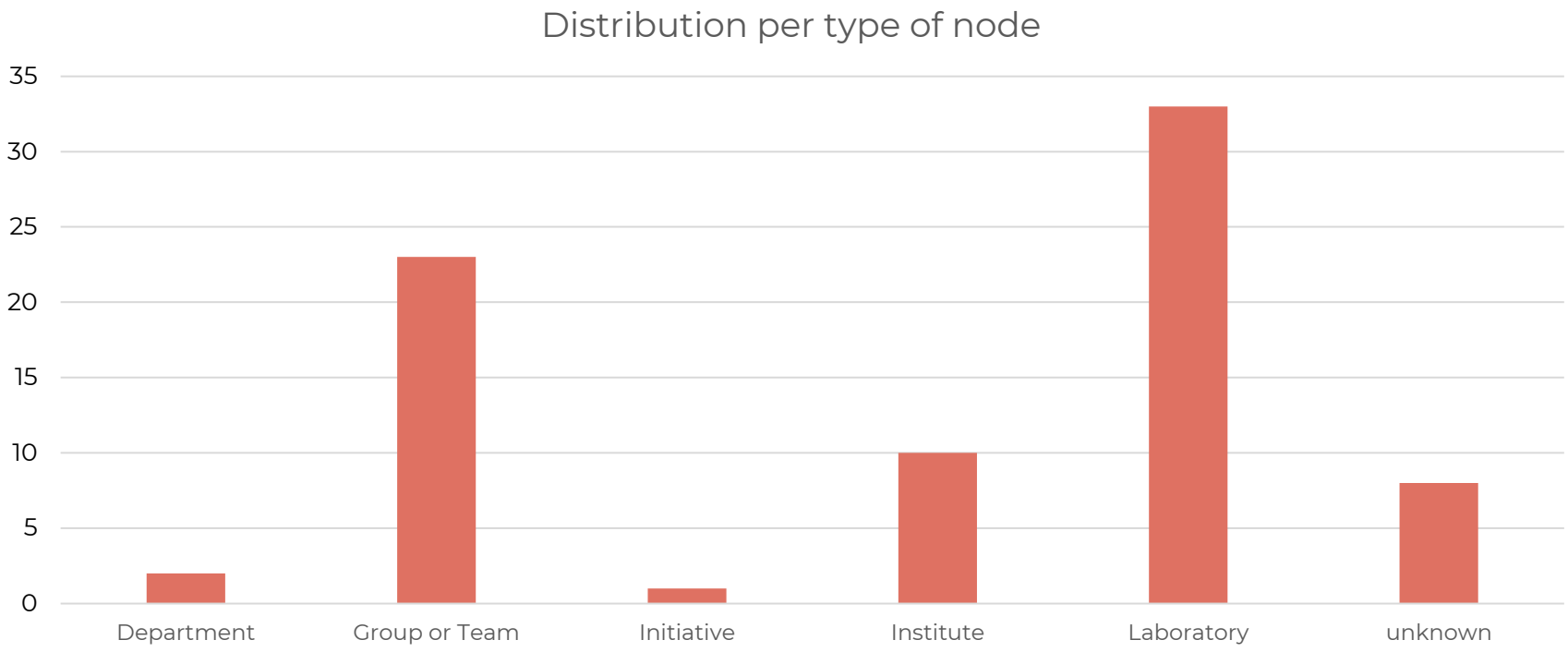
- The previous raw search produced a list of around 1000 AI nodes
- We removed the AI nodes which failed the third criterion, producing a list of around 600 AI nodes
- We run a pilot with around 20 AI nodes
- We invited the 600 AI nodes, and received positive responses from around 150 nodes
- From those 150 nodes, we received near 100 forms. These are presented in the following.

* **Note**: ELLIS units were not required to follow these criteria.

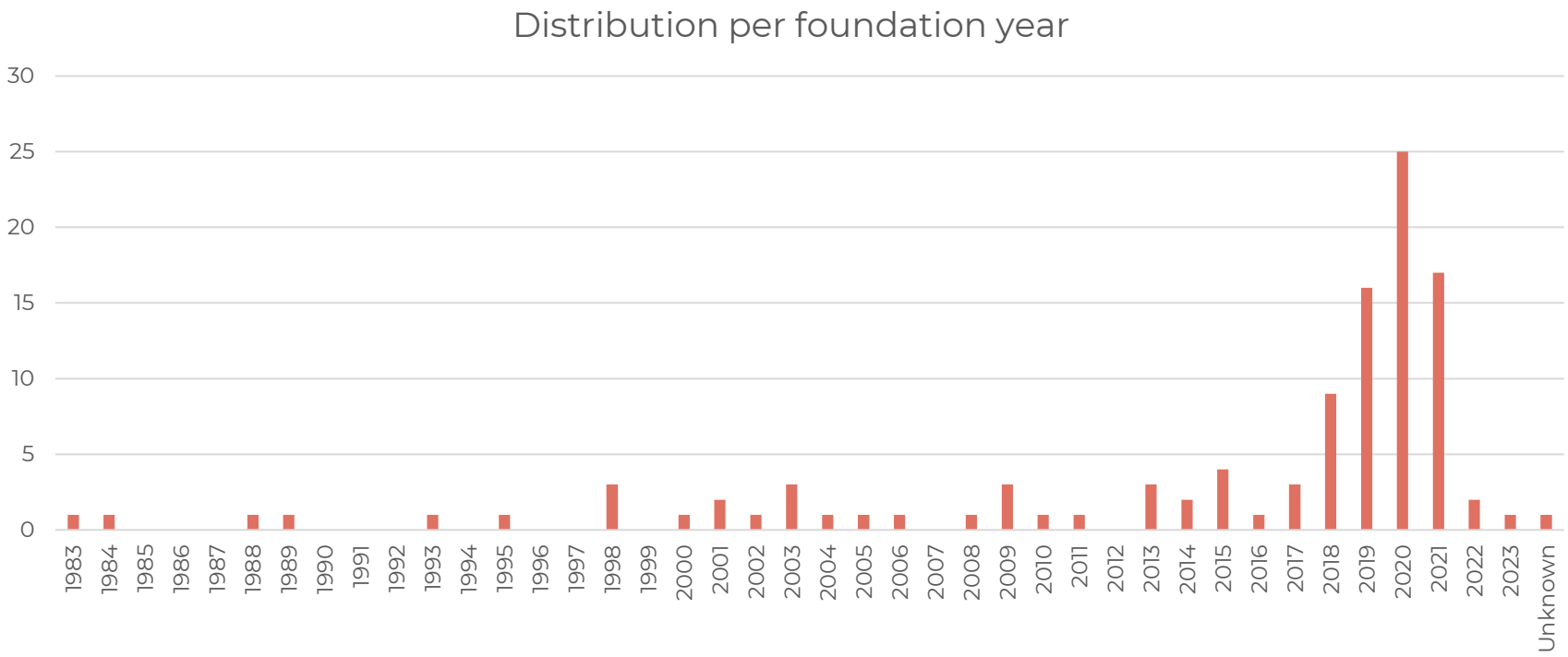
Statistics, nodes per country



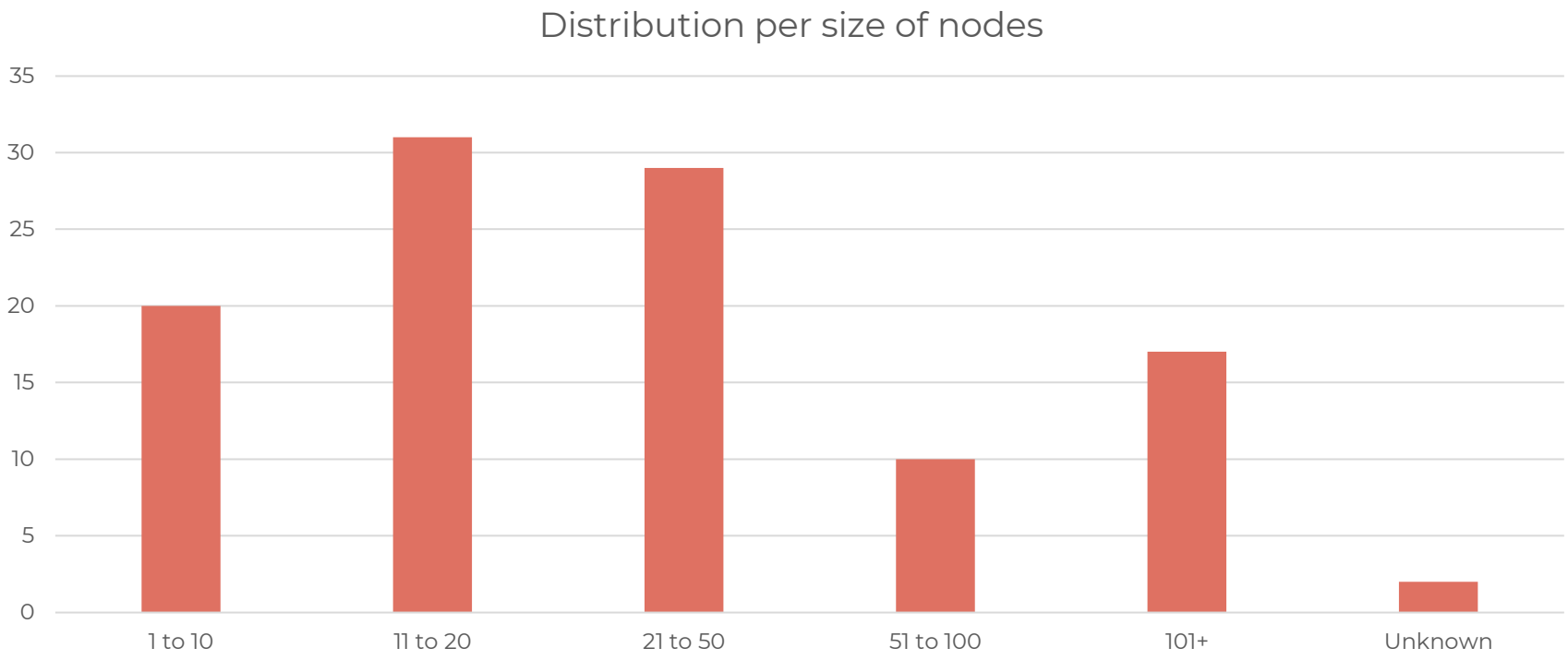
Statistics, per type of node



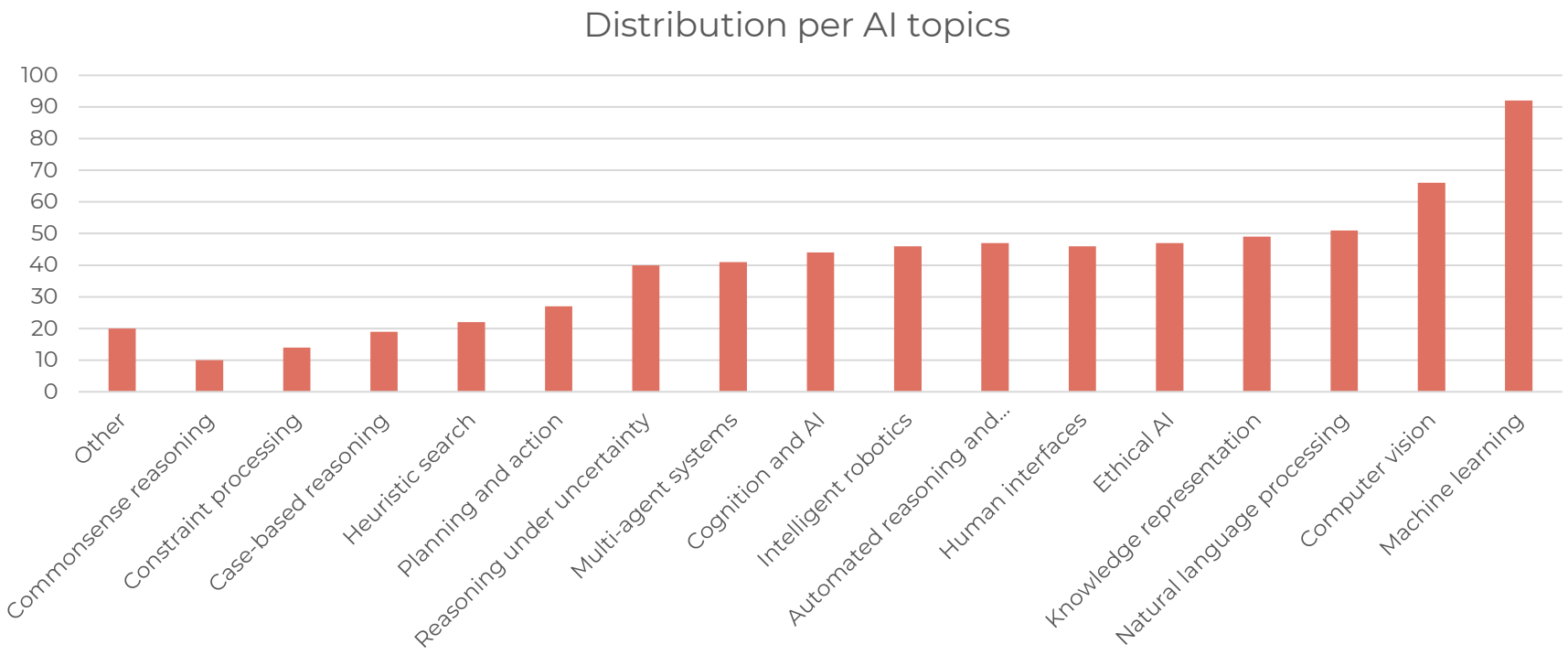
Statistics, foundation year



Statistics, size of nodes



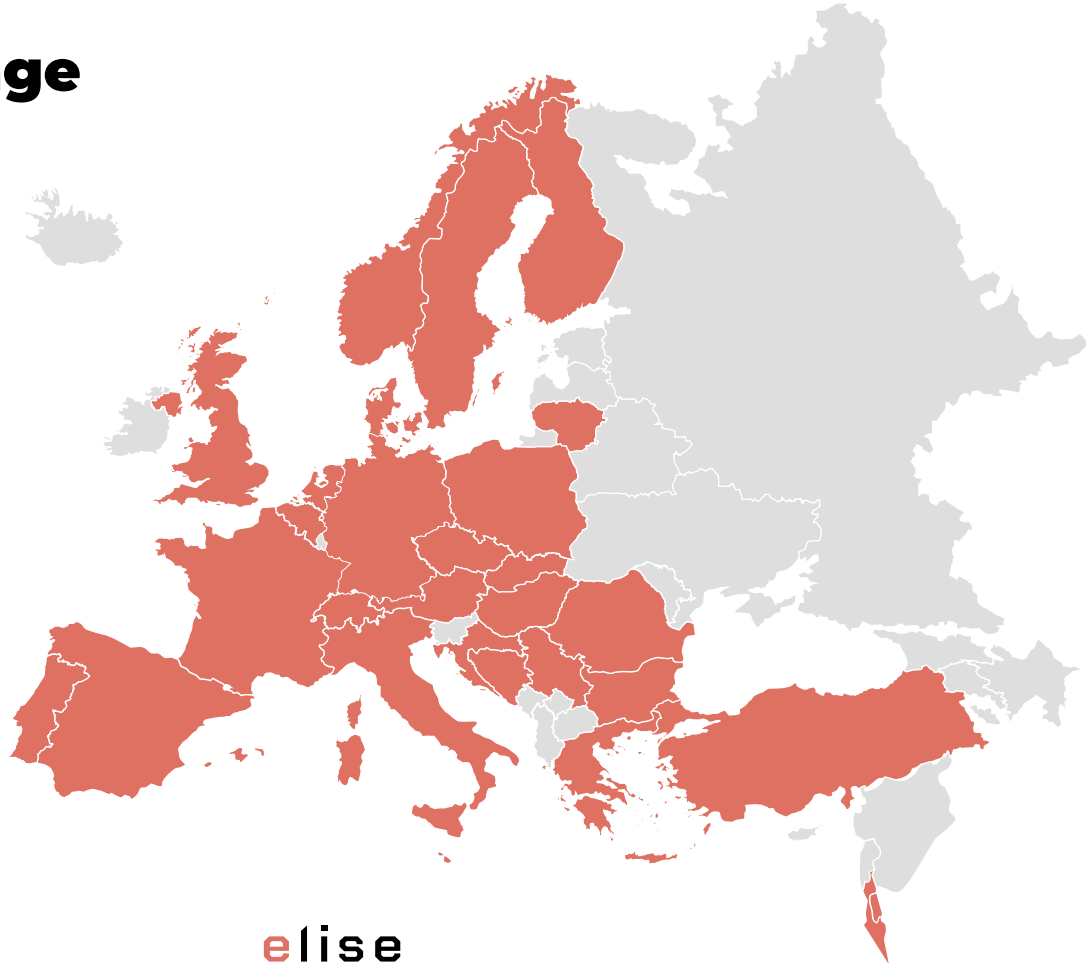
Statistics, AI topics



Country coverage

108
AI nodes

28
countries



FIT4BA Big Data Analytics and Artificial Intelligence Research Center FH | JOANNEUM

Research node:
Big Data and Artificial Intelligence Research Centre

Directors:
Prof. Wilhelm Zugaj
Prof. Erwin Zinser

Year of establishment:
2018

Number of researchers:
11-20

Parent organizations:
FH JOANNEUM
University of Applied Sciences

Contact information:

Topics of expertise

Computer vision, heuristic search, machine learning

Selected publications, peer-reviewed

- U. Pferschy, J. Schauer, C. Thielen, "Approximating the product knapsack problem", Optimization Letters, vol. 15, no. 8, pp. 2529-2540
- N. Chiarelli, M. Krnc, M. Milanič, U. Pferschy, N. Pivač, J. Schauer, "Fair packing of independent sets", International Workshop on Combinatorial Algorithms, pp. 154-165, 2020
- M. Ehrnhöfer-Reßler, E. Zinser, "Development of a multi-dimensional screening model to investigate the metabolic effects of extractables and leachables from packaging materials", Extractables & Leachables, May, 2016
- W. Zugaj, et al., "Ensuring data quality with hibernate and JSR 303", International Scientific Conference Proceedings Gabrovo, vol. 2, pp. 289-294, 2013
- W. Zugaj, A. S. Beichler, "Towards a NoSQL security map", Information Systems Development: Designing Digitalization

Selected projects, funded by the European Commission or national agencies

- FIT4BA - FFG (COIN Aufbau, grant no. 3014958), 2018-2023
- Zukunftsfonds Steiermark - Zukunftsfonds Steiermark - Land Steiermark (Next Green Tech, grant no. PN1408), 2022- 2023
- Green Big Data, FFG (Innovationslehrgänge), 2018-2021

Related study programmes, doctoral or master levels

- IT & Mobile Security, FH JOANNEUM
- Data Science and Artificial Intelligence

LIT Artificial Intelligence Lab

Research node:

Institute for Machine Learning at Johannes Kepler University Linz

Directors:

Prof. Dr. Sepp Hochreiter

Prof. Dr. Günter Klambauer

Prof. Dr. Johannes Brandstetter

Year of establishment:

2019

Number of researchers:

21-50

Parent organizations:

Johannes Kepler University Linz

Artificial Intelligence Research Group at the Institute of Machine Learning

Contact information:

Topics of expertise

Long Short-Term Memory, Reinforcement Learning, Vision, Representational Learning, Natural Language Processing (NLP), Bioinformatics (Genetics, Genomics), Deep Learning, Neural Networks, Normalization, probabilistic models, applications in bioinformatics, chemo-informatics and healthcare; Interpretability, ...

Selected publications, peer-reviewed

- Hochreiter, S., & Schmidhuber, J. (1997). Long short-term memory. Neural computation, 9, 1735–1780
- Heusel, M., Ramsauer, H., Unterthiner, T., Nessler, B., & Hochreiter, S. (2017). GANs trained by a two time-scale update rule converge to a local Nash equilibrium. Advances in Neural Information Processing Systems, 30
- Clevert, D.-A., Unterthiner, T, & Hochreiter, S. (2016). Fast and Accurate Deep Net-work Learning by Exponential Linear Units (ELUs). 4th International Conference on Learning Representations
- Klambauer, G., Unterthiner, T., Mayr, A., & Hochreiter, S. (2017). Self-normalizing neu-ral networks. Advances in Neural Information Processing Systems, 31, 972–981
- Hochreiter, S. (1998). The vanishing gradient problem during learning recurrent neural nets and problem solutions. Internat. J. Uncertain. Fuzziness Knowledge-Based Sys-tems, 6, 107-116
- Hochreiter, S., Bengio, Y., Frasconi, P., & Schmidhuber, J. (2001). Gradient Flow in Recurrent Nets: the Difficulty of Learning Long-Term Dependencies. In J. F. Kolen, & S. C. Kremer, A Field Guide to Dynamical Recurrent Networks

Selected projects, funded by the European Commission or national agencies

- Supporting STakeholders for Adaptive, Resilient and Sutstainable Water Management, 2022 - 2026
- Advanced machine learning for Innovative Drug Discovery (AIDD), 2021 - 2024
- European Learning and Intelligent Systems Excellence (ELISE), 2020 – 2023
- AI4GreenHeatingGrids, 2023 - 2026
- EPILEPSIA – Epileptic Seizures Detection and Prognosis Using Sensor Network and Intelligent Algorithms, 2022 - 2024
- COMET-Modul Security and Safety for Shared Artificial Intelligence (S3AI), 2020 - 2023
- Innovative, civil UAV Control Platform ReLoaded, 2020 – 2023
- AI-Based Retinal Image Analysis Research Group (AI-RI), 2021 – 2026
- AIDD - Advanced Machine Learning for Innovative Drug Discovery, 2022 – 2024
- LIT AI Lab, 2018 – 2025 https://www.jku.at/forschung/forschungs-dokumentation/forschungseinheit/286/

Related study programmes, doctoral or master levels

- Master programme in AI-Studies







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for Formal Mod

TRAIL
TRUSTED AI LABS
BY DIGITALWALLONIA4.AI / SPW-RECHERCHE

Research node:
Trusted AI Labs (TRAIL)

Directors:
Prof. Benoît Macq
Prof. Thierry Dutoit

Year of establishment:
2020

Number of researchers:
101+

Parent organizations:
SPW-Research (Walloon Government)

All French-speaking Universities of Wallonia and Research Centres

Contact information:

Topics of expertise

Cognition and AI, computer vision, constraint processing, ethical AI, human interfaces, intelligent robotics, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

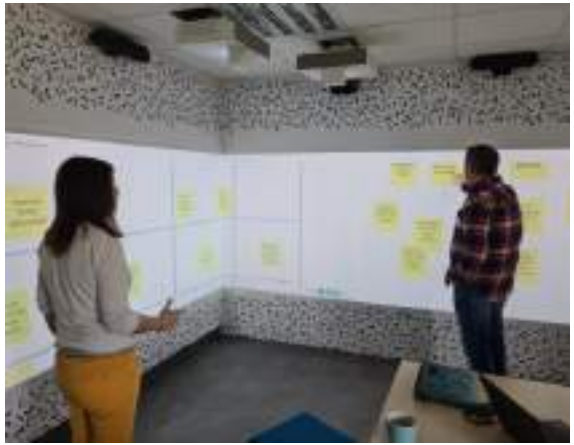
- A. Cioppa, et al., "Camera Calibration and Player Localization in SoccerNet-v2 and Investigation of their Representations for Action Spotting", IEEE Int. Conf. on Comput. Vision and Pattern Recognition Workshops (CVPRW), 2021
- A. Deliège, et al., "SoccerNet-v2: A Dataset and Benchmarks for Holistic Understanding of Broadcast Soccer Videos", Proc. IEEE International Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2021
- A. Garcia-Diaz, H. Bersini, "DensEMANN: Building a denseNet from scratch, layer by layer and kernel by kernel". IEEE International Joint Conference on Neural Networks (IJCNN), pp. 1-10, 2021
- A. Halin, J. G. Verly, M. van Droogenbroeck, "Survey and synthesis of state of the art in driver monitoring", Sensors, vol. 21, 2021
- T. A. Han, T. Lenaerts, F. C. Santos, L. Moniz Pereira, "Voluntary safety commitments provide an escape from over-regulation in AI development", Elsevier Technology in Society, vol. 68, no. 101843, 2022
- P. Lambert, C. de Bodt, M. Verleysen, J. A. Lee, "Stochastic quartet approach for fast multidimensional scaling", European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, pp. 417-422, 2021

Selected projects, funded by the European Commission or national agencies

- APTITUDE "Deep Learning and Image Processing for Urban Remote Monitoring and Event Detection", SPW-Research (Walloon Government), Win2Wal (grant no. 1910045), 2019-2022
- PROTHER-WAL "Proton Therapy in Wallonia", SPW-Research (Walloon Government), SPW DGO6 (grant no. 7289), 2019-2026
- VIADUCT "Voice Interface for Autonomous Driving based on User experienCe Techniques", Walloon Government, Marshall Plan 4.0 (grant no. 7982), 2018-2021
- SmartVRPark "Artificial Intelligence for VR Multi-user Applications", SPW-Research (Walloon Government), Win2Wal (grant no. 2010167), 2021-2022

Related study programmes, doctoral or master levels

- Training and programmes offered by TRAIL founding universities, TRAIL Institute




TRAIL


TRAIL

KU LEUVEN

LEUVEN.AI INSTITUTE

Research node:

Leuven.AI-KU Leuven Institute for Artificial Intelligence

Directors:

Prof. Luc De Raedt

Year of establishment:

2020

Number of researchers:

101+

Parent organizations:

KU Leuven

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, cognition and AI, computer vision, constraint processing, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

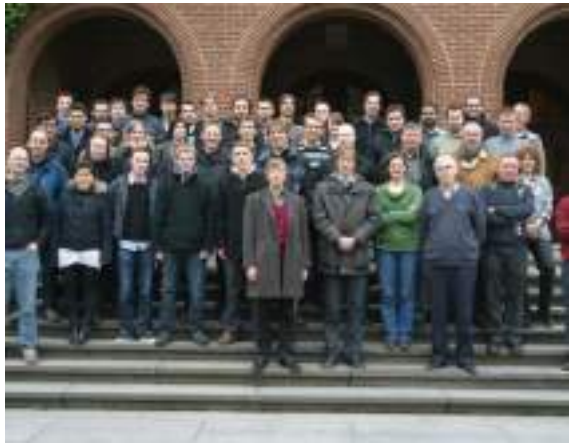
- R. Hemelings, B. Elen, J. Barbosa-Breda, M. B. Blaschko, P. De Boever, I. Stalmans, "Deep learning on fundus images detects glaucoma beyond the optic disc", Sci. Rep., vol. 11, no. 1, pp. 20313, 2021
- Y. Feng, J. Fan, J. A. K. Suykens, "A statistical learning approach to modal regression", J. Mach. Learn. Res., vol. 21, no. 2, pp. 1–35, 2020
- M. Delange, et al., "A continual learning survey: Defying forgetting in classification tasks", IEEE Trans. Pattern Anal. Mach. Intell., vol. PP, pp. 1–1, 2021
- S. Vandenhende, S. Georgoulis, W. Van Gansbeke, M. Proesmans, D. Dai, and L. Van Gool, "Multi-task learning for dense prediction tasks: A survey", IEEE Trans. Pattern Anal. Mach. Intell., vol. PP, pp. 1–1, 2021
- L. de Raedt, S. Dumančić, R. Manhaeve, G. Marra, "From statistical relational to neural-symbolic artificial intelligence", Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence, pp. 4943–4950, 2021
- T. Deruyttere, V. Milewski, M.-F. Moens, "Giving commands to a self-driving car: How to deal with uncertain situations?", Eng. Appl. Artif. Intell., vol. 103, no. 104257, pp. 104257, 2021

Selected projects, funded by the European Commission or national agencies

- TAILOR "Foundations of Trustworthy AI-Integrating Reasoning, Learning and Optimization", European Commission (Horizon 2020, grant no. 952215), 2020-2024
- AI4MEDIA "A European Excellence Centre for Media, Society and Democracy", European Commission (Horizon 2020, grant no. 951911), 2020-2024
- ELISE "European Learning and Intelligent Systems Excellence", European Commission (Horizon 2020, grant no. 951847), 2020-2023
- FLAIR "Flemish AI Research Program", AI Vlaanderen

Related study programmes, doctoral or master levels

- Advanced Master of Artificial Intelligence, KU Leuven
- Advanced Master Artificial Intelligence in Business and Industry, KU Leuven



ARTIFICIAL INTELLIGENCE RESEARCH GROUP

Research node:
Artificial Intelligence Lab

Directors:
Prof. Dr. Ann Nowé

Year of establishment:
1983

Number of researchers:
51-100

Parent organizations:
Vrije Universiteit Brussel

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, knowledge representation, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- C. F. Hayes, et al., "A practical guide to multi-objective reinforcement learning and planning", Autonomous Agents and Multi-Agent Systems, vol. 36, no. 26, 2022
- R. van Trijp, K. Beuls, P. van Eecke, "The FCG editor: An innovative environment for engineering computational construction grammars", PLOS ONE, vol. 17, no. 6, pp. e0269708, 2022
- B. Bogaerts, E. Gamba, T. Guns, "A framework for step-wise explaining how to solve constraint satisfaction problems", Artificial Intelligence, vol. 300, no. 103550, 2021
- E. Bargiacchi, D. M. Roijers, A. Nowé, "AI-toolbox: A C++ library for reinforcement learning and planning (with Python Bindings)", Journal of Machine Learning Research, vol. 21, no. 102, pp. 1-12, 2020
- G. A. Wiggins, "Creativity, information, and consciousness: The information dynamics of thinking", Physics of Life Reviews, vol. 34-35, pp. 1-39, 2020
- A. Nowé, P. Vrancx, Y. M. De Hauwere, "Game theory and multi-agent reinforcement learning", Reinforcement Learning: State-of-the-Art, Springer, pp. 441-470, 2012

Selected projects, funded by the European Commission or national agencies

- DESCARTES "infectious DisEaSe eConomics and Ai with guaRanTEeS", VLIR (grant no. iBOF/21/027), 2021-2024
- TAILOR "Foundations of Trustworthy AI-Integrating Reasoning, Learning and Optimization", European Commission, (Horizon Europe, grant no. 952215), 2020-2023
- CTRLxAI=T(H)RUST "CTRL schemes merged with eXplainable AI for t(h)rustworthy control of physical dynamic systems", VLAIO, (SBO, grant no. FWOSBO46), 2022-2026
- AI Plan "Flanders AI Research Program", Flemish Government (AI Plan), 2019-ongoing

Related study programmes, doctoral or master levels

- M.Sc. in Applied Sciences and Engineering, Computer Science, specialisation Artificial Intelligence, Vrije Universiteit Brussel
- Doctor of Sciences, Vrije Universiteit Brussel


AI
XPERIENCE

Research node:
Neurocomputing Laboratory

Directors:
Prof. Valeri Mladenov

Year of establishment:
2014

Number of researchers:
1-10

Parent organizations:
Technical University of Sofia

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, human interfaces, intelligent robotics, knowledge representation, machine learning

Selected publications, peer-reviewed

- L. Ekonomou, C. A. Christodoulou, V. Mladenov, "An artificial neural network software tool for the assessment of the electric field around metal oxide surge arresters", Neural Comput & Applic, vol. 27, pp. 1143–1148, 2016
- V. Mladenov, S. Kirilov, "Synthesis and analysis of a memristor-based perceptron for logical function emulation", Przegląd Elektrotechniczny, vol. 1, pp. 24-27, 2016
- W. Gevaer, G. Tsenov, V. Mladenov, "Neural networks used for speech recognition", Journal of Automatic control, vol. 20, no.1, pp.1-7, 2010
- L. Ekonomou, C. A. Christodoulou, V. Mladenov, "A short-term load forecasting method using artificial neural networks and wavelet analysis", Int. J. Power Syst, vol. 1, pp.64-68, 2016
- V. Pereira, F. Tavares, P. Mihaylova, V. Mladenov, P. Georgieva, "Factor analysis for finding invariant neural descriptors of human emotions", Complexity, 2018
- K. Tonchev, et al., "Personalized and intelligent sleep lifestyle reasoner with web application for improving quality of sleep part of AAL architecture", Pervasive Computing Paradigms for Mental Health, Springer, vol 207, 2018

Selected projects, funded by the European Commission or national agencies

- JAUNTY "Joint undergAduate coUrses for smart eNergy managemenT sYstems", European Commission (Erasmus+, grant no. 2020-1-BG01-KA203-079237), 2020-2023
- FLEXIGRID "Enabling flexibility for future distribution grid", European Commission (Horizon 2020, grant no. 864048), 2019-2023
- SPEAR "Secure and PrivatE smArt gRid", European Commission (Horizon 2020, grant no. 787011), 2018-2021
- FLEXITRANSTORE "An Integrated Platform for Incresed FLEXIbility in smart TRANSmission grids with STORage Entities and large penetration of Renewable Energy Sources", European Commission (Horizon 2020, grant no. 774407), 2017-2022

Related study programmes, doctoral or master levels

- Ph.D in Artificial Intelligence Systems, Technical University of Sofia
- M.Sc. in Automation, information and control technology, Technical University of Sofia






AIRI

Research node:

Center for Artificial Intelligence And Cybersecurity

Directors:

Prof. dr. sc. Jonatan Lerga

Prof. dr. sc. Ivan Štajduhar

Year of establishment:

2020

Number of researchers:

51-100

Parent organizations:

University of Rijeka

Contact information:

Topics of expertise

Computer vision, ethical AI, human interfaces, intelligent robotics, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- M. Njirjak, et al., "The Choice of Time–Frequency Representations of Non-Stationary Signals Affects Machine Learning Model Accuracy: A Case Study on Earthquake Detection from LEN-DB Data", Mathematics, vol. 10, no. 6, 2022
- E. Otović, M. Njirjak, D.vJozinović, G. Mauša, A. Michelini, I. Štajduhar, "Intra-domain and cross-domain transfer learning for time series data—How transferable are the features", Knowledge-Based Systems, vol. 239, 2022
- N. Lopac, F. Hržić, I. P. Vuksanović, J. Lerga, "Detection of Non-Stationary GW Signals in High Noise From Cohen's Class of Time–Frequency Representations Using Deep Learning", IEEE Access, vol. 10, pp. 2408-2428, 2022
- F. Hržić, M. Janisch, I. Štajduhar, J. Lerga, E. Sorantin, S. Tschauner, "Modeling Uncertainty in Fracture Age Estimation from Pediatric Wrist Radiographs", Mathematics, vol. 9, no. 24, 2021
- S. Šimunić, D. Bernaca, K. Lenac, "Verifiable Computing Applications in Blockchain", IEEE Access, vol. 9, pp. 156729-156745, 2021
- K. Babić, M. Petrović, S. Beliga, S. Martinčić-Ipšić, M. Matešić, A. Meštrović, "Characterisation of COVID-19-Related Tweets in the Croatian Language: Framework Based on the Cro-CoV-cseBERT Model", Applied Sciences, vol. 11, no. 21, 2021

Selected projects, funded by the European Commission or national agencies

- RadiologyNET "Machine Learning for Knowledge Transfer in Medical Radiology", Croatian Science Foundation (grant no. IP-2020-02-3770), 2021-2024
- InfoCoV "Multilayer Framework for the Information Spreading Characterization in Social Media during the COVID-19 Crisis", Croatian Science Foundation (grant no. IP-2020-02-3770), 2020-2022
- DeShPet "Design of short catalytic peptides and peptide assemblies", Croatian Science Foundation (grant no. UIP-2019-04-7999), 2020-2025
- KACAVIS "Knowledge-based Approach to Crowd Analysis in Video Surveillance", Croatian Science Foundation (grant no. HRZZ-IP-01-2018), 2018-2020

Related study programmes, doctoral or master levels

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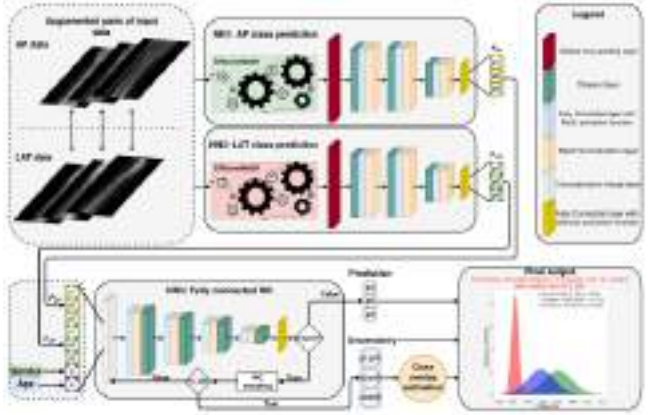



KAMPUS

NEAR EAST UNIVERSITY
AI AND ROBOTICS INSTITUTE

Research node:
NEU AI and Robotics Institute

Directors:
Prof. Dr. İrfan Suat GÜNSEL
Prof. Dr. Mustafa KURT
Prof. Dr. Fadi AL-TURJMAN

Year of establishment:
2020

Number of researchers:
101+

Parent organizations:
Near East University

Contact information:

Topics of expertise

Computer vision, machine learning

Selected publications, peer-reviewed

- S. Nataraj, F. Al-Turjman, A. Adom, R. Sitharthan, M. Rajesh, "Intelligent robotic chair with thought control and communication aid using higher order spectra band features", IEEE Sensors Journal
- V. Gomathy, et al., "Investigating the Spread of Coronavirus Disease via Edge-AI and Air Pollution Correlation", ACM Transactions on Internet Technology, vol. 21, no. 4, pp. 1-10
- F. Al-Turjman, L. J. Poncha, S. Alturjman, L. Mostarda, "Enhanced deployment strategy for the 5G drone-BS using artificial intelligence", IEEE Access, vol. 7, no. 1, pp. 75999-76008
- D. Deebak, F. Al-Turjman, "Digital-twin assisted: Fault diagnosis using deep transfer learning for machining tool condition", Wiley International Journal of Intelligent Systems
- F. Al-Turjman, H. Osuli, "AI for dynamic packet size optimization of batteryless IoT nodes: A case study for wireless body area sensor networks", Neural Computing and Applications, vol. 32, no. 20, pp. 16167-16178
- R. Gupta, S. Tanwar, P. Italiya, F. Al-Turjman, A. Nauman, S. Kim, "Smart contract privacy protection using AI in cyber-physical systems: Tools, techniques, and challenges", IEEE Access, vol. 8, no. 1, pp. 24746-24772

Selected projects, funded by the European Commission or national agencies

- "Intelligent Student Registration System", Near East University (grant no. 8079), 2020-2022
- "Cryptocurrency via Blockchain Interface", Near East University (grant no. 8078), 2020-2022
- "Virtual Hairstyle", Near East University (grant no. 8077), 2019-2021
- "Artificial Intelligence in Everything", Near East University (grant no. 8076), 2019-2021

Related study programmes, doctoral or master levels

- M.Sc. Artificial Intelligence, Near East University


5
NEAR EAST UNIVERSITY


ARTIFICIAL INTELLIGENCE IN EVERYTHING
International Conference on Artificial Intelligence In Everything
Lefkosa, Cyprus | August 02-04, 2022 | 9am Cyprus Time


SpeechToText

NEAR EAST UNIVERSITY
INTERNATIONAL RESEARCH CENTER FOR AI AND IOT

Research node:

NEU-International Research Center for AI and IoT

Directors:

Prof. Dr. Mustafa Kurt
Prof. Dr. Fadi Al-Turjman

Year of establishment:

2019

Number of researchers:

101+

Parent organizations:

NEAR EAST UNIVERSITY

Contact information:

Topics of expertise

Machine learning

Selected publications, peer-reviewed

- S. Chaudhry, K. Yahya, F. Al-Turjman, "A privacy enhanced authentication scheme for securing smart grid infrastructure", IEEE Transactions on Industrial Informatics, vol. 18, no. 7, pp. 5000-5006, 2022
- R. Sekaran, A. Munnangi, S. Rajeyyagari, M. Ramachandran, F. Al-Turjman, "Ant colony resource optimization for industrial IoT and CPS", International Journal of Intelligent Systems, 2021
- S. Qayyum, F. Ullah, F. Al-Turjman, "Managing smart cities through six sigma DMADICV method: A review-based conceptual framework", Elsevier Sustainable Cities and Society, vol. 72, no. 1, pp. 103022, 2021
- D. Deebak, F. Al-Turjman, "Digital-twin assisted: Fault diagnosis using deep transfer learning for machining tool condition", Wiley International Journal of Intelligent Systems, 2021.
- F. Ullah, F. Al-Turjman, S. Qayyum, H. Inam, "Advertising through UAVs: Optimized path system for delivering smart real-estate advertisement materials", Wiley International Journal of Intelligent Systems, vol. 36, no. 7, pp. 3429-3463, 2021
- F. Al-Turjman, D. Deebak, "A proxy-authorized public auditing scheme for cyber-medical systems using AI-IoT", IEEE Transactions on Industrial Informatics, 2021

Selected projects, funded by the European Commission or national agencies

- "Covid 19 Project", Near East University (grant no. 8083), 2020-2022
- "The student-certificate management system based on Blockchain Project", Near East University (grant no. 8082), 2020-2022
- "NEU-Attend APP Project", Near East University (grant no. 8081), 2019-2021
- "Mobile App for Campus Facility Detection", Near East University (grant no. 8080), 2019-2021

Related study programmes, doctoral or master levels

- M.Sc. Artificial Intelligence, Near East University


NEAR EAST UNIVERSITY
INTERNATIONAL RESEARCH CENTER FOR AI AND IOT
CT-Scan Image Uploads


Üniversitesi nden Uluslararası Bilim

Centre for Artificial Intelligence in Oncology

Research node:
Centre for Artificial Intelligence in Oncology

Directors:
Prof. Michal Kozubek

Year of establishment:
2021

Number of researchers:
21-50

Parent organizations:
Masaryk University

Contact information:

Topics of expertise

Computer vision, machine learning

Selected publications, peer-reviewed

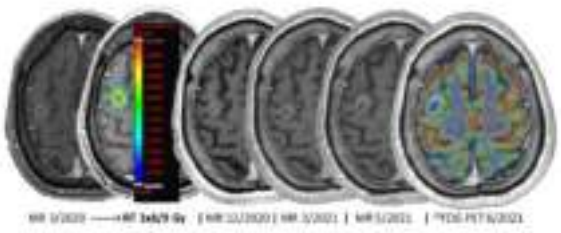
- V. Ulman, M. Maška, K. E. G. Magnusson, et al., "An objective comparison of cell-tracking algorithms", Nature Methods, vol. 14, no. 12, pp. 1141-1152, 2017
- M. Kozubek, "When deep learning meets cell image synthesis", Cytometry Part A, vol. 97, no. 3, pp. 222-225, 2020
- D. Wiesner, T. Nečasová, D. Svoboda, "On generative modeling of cell shape using 3D GANs", LNCS, vol. 11752, pp. 672-682, 2019
- F. Lux, P. Matula, "DIC image segmentation of dense cell populations by combining deep learning and watershed", IEEE International Symposium on Biomedical Imaging, pp. 236-239, 2019
- E. Gómez-de-Mariscal, M. Maška, A. Kotrbová, et al., "Deep-learning-based segmentation of small extracellular vesicles in transmission electron microscopy images", Scientific Reports, vol. 9, no. 1, p. 13211, 2019
- C. E. Akbas, M. Kozubek, "Condensed U-Net (CU-Net): An improved U-Net architecture for cell segmentation powered by 4x4 max-pooling layers", IEEE Int. Symposium on Biomedical Imaging, pp. 446-450, 2020

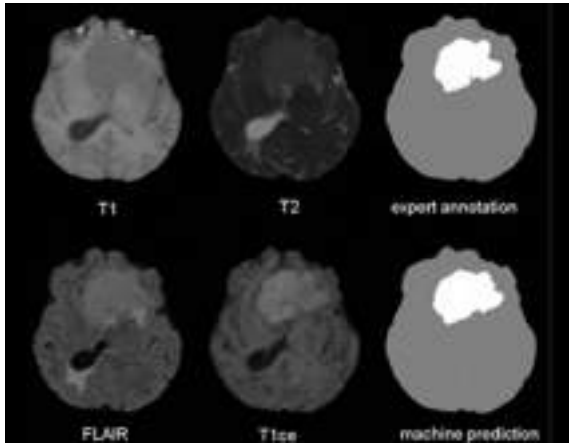
Selected projects, funded by the European Commission or national agencies

- "MRI radiomic analysis in radiotherapy of brain metastases", Czech Health Research Council (grant no. NU22-03-00159), 2022-2025
- "Brain tumor segmentation and classification", Czech Health Research Council (grant no. NU21-08-00359), 2021-2024
- "Deep computational analysis of mammary epithelial morphogenesis and cancer", Grant Agency of Masaryk University (grant no. MUNI/G/1446/2018, and grant no. MUNI/G/1775/2020), 2019-2021 and 2021-2023
- "AI support for Clinical Oncology and Patient Empowerment", Grant Agency of Masaryk University (grant no. MUNI/G/1763/2020), 2021-2023

Related study programmes, doctoral or master levels

- M.Sc. in Visual Informatics, Specialization: Image Processing and Analysis, Masaryk University
- Ph.D. in Computer Science, Specialization: Biomedical Image Processing, Masaryk University

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T2
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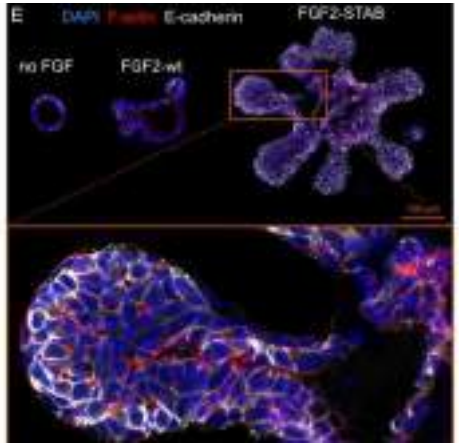
FLAIR
T1ce
machine prediction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no FGF
FGF2-wt

CZECH INSTITUTE OF INFORMATICS ROBOTICS AND CYBERNETICS CTU IN PRAGUE

Research node:

Czech Institute of Informatics, Robotics and Cybernetics (CIIRC)

Directors:

Dr. Ondrej Velek

Prof. Vladimir Marik

Year of establishment:

2013

Number of researchers:

101+

Parent organizations:

Czech Technical University in Prague

Contact information:

Topics of expertise

Cognition and AI, automated reasoning and inference, computer vision, constraint processing, ethical AI, intelligent robotics, machine learning, multi-agent systems, natural language processing, planning and action, and reasoning under uncertainty

Selected publications, peer-reviewed

- Relja Arandjelovic, Petr Gronat, Akihiko Torii, Tomas Pajdla, Josef Sivic, "NetVLAD: CNN architecture for weakly supervised place recognition", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 40, No. 6, pp. 1437 – 1451, 2018.
- Carl Toft, Will Maddern, Akihiko Torii, Lars Hammarstrand, Erik Stenborg, Daniel Safari, Masatoshi Okutomi, Marc Pollefeys, Josef Sivic, Tomas Pajdla, Fredrik Kahl, Torsten Sattler, "Long-term visual localization revisited", IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 44, no. 4, pp. 2074-2078, 2020
- Federica Arrigoni, Andrea Fusiello, Romeo Rizzi, Elisa Ricci, Tomas Pajdla, "Revisiting Viewing Graph Solvability: an Effective Approach Based on Cycle Consistency", IEEE Transactions on Pattern Analysis and Machine Intelligence, DOI: 10.1109/TPAMI.2022.3212595, 2022.
- Piotr Bojanowski, Edouard Grave, Armand Joulin, Tomas Mikolov, "Enriching word vectors with subword information", Transactions of the association for computational linguistics, Vol. 5, pp. 135–146, 2017.
- Thomas C. Hales et al., "A formal proof of the Kepler conjecture", Forum of mathematics, Pi, Vol. 5, pp. e2, 2017.
- Tim De Bruin, Jens Kober, Karl Tuyls, Robert Babuska, "Experience selection in deep reinforcement learning for control", Journal of Machine Learning Research, Vol. 19, 2018.

Selected projects, funded by the European Commission or national agencies

- ELISE "European Network of AI Excellence Centres", European Commission (grant no. 951847), 2020-2024.
- VISION "Value and Impact through Synergy, Interaction and coOperation of Networks of AI Excellence Centres", European Commission (grant no. 952070), 2020-2024.
- ELIAS "European Lighthouse of AI for Sustainability", European Commission (grant no. 101120237), 2023-2027.
- ERC AdG, FRONTIER, "Federated foundational models for embodied perception", EC (GA no. 101097822), 2024-2028.
- ERC CoG, AI4REASON, "Artificial Intelligence for Large-Scale Computer-Assisted Reasoning", EC (GA no. 649043), 2015-2020.

Related study programmes, doctoral or master levels

- MSc program, Open Informatics, Czech Tech. Uni., Facultry of Elec. Eng.
- Phd program, Czech Tech. Uni., Facultry of Elec. Eng.

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UNIT
PRAGUE

AALBORG UNIVERSITY

Research node:
AI for the People Centre

Directors:
Prof. Thomas B. Moeslund
Prof. Jeppe Agger Nielsen
Prof. Thomas Ploug

Year of establishment:
2019

Number of researchers:
101+

Parent organizations:
Aalborg University

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- J. Xie, Z. Ma, G. Zhang, J. H. Xue, Z. H. Tan, J. Guo, "Advanced dropout: A model-free methodology for Bayesian dropout pptimization", IEEE Transactions on Pattern Analysis and Machine Intelligence, 2022
- J. Aaen, J. A. Nielsen, A. Carugati, "The dark side of data ecosystems: A longitudinal study of the DAMD project", European Journal of Information Systems, 2021
- T. Ploug, S. Holm, "Right to contest AI diagnostics: Defining transparency and explainability requirements from a patient's perspective", Artificial Intelligence in Medicine, 2021
- N. Ristea, N. Madan, R. T. Ionescu, K. Nasrollahi, F. S. Khan, T. B. Moeslund, M. Shah, "Self-supervised predictive convolutional attentive block for anomaly detection", IEEE Conference on Computer Vision and Pattern Recognition, 2022
- M. Tappler, B. K. Aichernig, G. Bacci, M. Eichlseder, K. G. Larsen, "L*-based learning of Markov decision processes", Formal Aspects of Computing, 2021
- B. Zheng, Q. Hu, L. Ming, J. Hu, L. Chen, K. Zheng, C. S. Jensen, "SOUP: Spatial-temporal demand forecasting and competitive supply in transportation", IEEE Transactions on Knowledge and Data Engineering, 2021

Selected projects, funded by the European Commission or national agencies

- Pioneer Centre for Artificial Intelligence, Danish National Research Foundation, 2021-2031
- Data Science Academy, Novo Nordisk Foundation, 2021-2026
- Algorithms, Data & Democracy, Villum and Velux Foundations, 2021-2031
- Digital Research Centre, Innovation Fund Denmark, 2021-2026

Related study programmes, doctoral or master levels

- M.Sc. in Artificial Intelligence, Vision and Sound, Aalborg University, Denmark
- M.Sc. in Data Science and Machine Learning, Aalborg University, Denmark

Research node:

Centre for AI Science and Applications

Directors:

Prof. Arthur Zimek

Prof. Peter Schneider-Kamp

Assoc. Prof. Luís Cruz-Filipe

Year of establishment:

2021

Number of researchers:

21-50

Parent organizations:

University of Southern Denmark

Contact information:



Topics of expertise

Automated reasoning and inference, computer vision, ethical AI, knowledge representation, machine learning

Selected publications, peer-reviewed

- H. Flynn, D. Reeb, M. Kandemir, J. Peters, "PAC-Bayesian lifelong learning for multi-armed bandits", Data Min. Knowl. Discov., vol. 36, no. 2, pp. 841-876, 2022
- Y. Cai, A. Zimek, E. Ntoutsi, "XPROAX-Local explanations for text classification with progressive neighborhood approximation", DSAA, pp. 1-10, 2021
- A. Hartebrodt, R, Nasirigerdeh, D. B. Blumenthal, R. Röttger, "Federated principal component analysis for genome-wide association studies" ICDM, pp. 1090-1095, 2021
- T. Liu, R. Amadini, M. Gabbrielli, J. Mauro, "sunny-as2: Enhancing SUNNY for algorithm selection" J. Artif. Intell. Res., vol. 72, pp. 329-376, 2021
- L. Cruz-Filipe, I. Nunes, G. Gaspar", "Hypothetical answers to continuous queries over data streams" AAAI, pp. 2798-2805, 2020
- H. O. Marques, R. J. G. B. Campello, J. Sander, A. Zimek, "Internal evaluation of unsupervised outlier detection", ACM Trans. Knowl. Discov. Data, vol. 14, no. 4, pp. 47:1-47:42, 2020

Selected projects, funded by the European Commission or national agencies

- CORENET "Complex chemical reaction networks for breakthrough scalable reservoir computing", European Commission (Horizon-EIC-2021-Pathfinderopen-01, grant no. 101046294), 2022-2026
- PREPARE "Know your own risk-personalized risk estimation and prevention of cardiovascular disease", Danmarks Innovationsfond (Grand Solutions), 2022-2025
- Screen4Care "Shortening the path to rare disease diagnosis by using newborn genetic screening and digital technologies", European Commission (imi, grant no. 101034427), 2021-2026
- FeatureCloud "Privacy-preserving federated machine learning integrating blockchain technology for reduced cyber risks in a world of distributed healthcare", European Commission (Horizon 2020, grant no. 826078), 2019-2023

Related study programmes, doctoral or master levels

- Master of Science, Computer Science, University of Southern Denmark
- Master of Science, Data Science, University of Southern Denmark

Research node:

The Artificial Intelligence and Machine Learning group

Directors:

Prof. Christian S. Jensen

Prof. Kim G. Larsen

Prof. Thomas D. Nielsen

Year of establishment:

2019

Number of researchers:

21-50

Parent organizations:

Aalborg University, Department of Computer Science

Contact information:

Topics of expertise

Knowledge representation, machine learning, natural language processing, reasoning under uncertainty.

Selected publications, peer-reviewed

- A. Masegosa, T. D. Nielsen, H. Langseth, D. Ramos-López, A. Salmerón, A. L. Madsen, "Bayesian models of data streams with Hierarchical Power Priors", International Conference on Machine Learning, 2017
- D. Campos, T. Kieu, C. Guo, F. Huang, K. Zheng, B. Yang, C. S. Jensen, "Unsupervised time series outlier detection with diversity-driven convolutional ensembles". VLDB Endowment, vol. 15, no. 3, pp. 611-623, 2022
- N. Van Berkel, J. Goncalves, D. Russo, S. Hosio, M. B. Skov, "Effect of information presentation on fairness perceptions of machine learning predictors", CHI, 2021
- M. Goorden, K. G. Larsen, J. E. Nielsen, T. D. Nielsen, M. R. Rasmussen, J. Srba" Learning safe and optimal control strategies for storm water detention ponds", IFAC Conference on Analysis and Design of Hybrid Systems, 2021
- G. Pellegrini, A. Tibo, P. Frasconi, A. Passerini, M. Jaeger, "Learning aggregation functions", International Joint Conference on Artificial Intelligence (IJCAI), 2021
- V. Ho Long, N. T. T. Ho, T. B. Pedersen, "Efficient temporal pattern mining in big time series using mutual information", VLDB Endowment, vol. 15, no. 3, pp. 673-685, 2022

Selected projects, funded by the European Commission or national agencies

- DIREC "Digital Research Centre Denmark", Innovation Fund Denmark, 2021-2026
- MORE "Management of Real-time Energy Data", European Commission (grant no. 957345), 2020-2023
- "Algorithmic Explainability for Everyday Citizens", Carlsberg Foundation, 2021-2024
- S4OS "Scalable analysis and Synthesis of Safe, Secure and Optimal Strategies for Cyber-Physical Systems", VILLUM FONDEN

Related study programmes, doctoral or master levels

- M.Sc. in Computer Science, Aalborg University
- M.Sc. in Data Science and Machine Learning, Aalborg University

UNIVERSITY OF COPENHAGEN

Research node:
SCIENCE AI Centre

Directors:
Dr. K. Krogh Andersen (Chair)
Prof. C. Igel (Director)
A. Pall Skött (Manager)

Year of establishment:
2018

Number of researchers:
101+

Parent organizations:
University of Copenhagen

Contact information:

Topics of expertise

Computer vision, ethical AI, heuristic search, human interfaces, intelligent robotics, machine learning, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- P. Atanasova, J. G. Simonsen, C. Lioma, I. Augenstein, "Generating fact checking explanations", Annual Conference of the Association for Computational Linguistics (ACL), 2020
- I. E. I. Bekkouch, B. Maksudov, S. Kiselev, T. Mustafaev, T. Vrtovec, B. Ibragimov, "Multi-landmark environment analysis with reinforcement learning for pelvic abnormality detection and quantification", Medical Image Analysis, vol. 78, 2022
- H. Bourel, O. A. Maillard, M. S. Talebi, "Tightening exploration in upper confidence reinforcement learning", International Conference on Machine Learning (ICML), 2020
- P. S. Czolbe, A. Feragen, O. Krause, "Spot the difference: Detection of topological changes via geometric alignment", Advances in Neural Information Processing Systems (NeurIPS), vol. 34, 2021
- N. S. Detlefsen, S. Hauberg, W. Boomsma, "Learning meaningful representations of protein sequences", Nature Communications, vol. 13, no. 1, pp. 1-12, 2022
- J. Zimmert, Y. Seldin, "Tsallis-INF: An optimal algorithm for stochastic and adversarial bandits", Journal of Machine Learning Research, 2021

Selected projects, funded by the European Commission or national agencies

- ADD "Algorithms, Data and Democracy", Villum Foundation
- DeReEco "Deep Learning and Remote Sensing for Unlocking Global Ecosystem Resource Dynamics", Villum Foundation (Villum Synergy)
- AI4Xray "Intelligent prioritization and decision support for chest x-ray analysis", Danish Innovation Foundation
- Center for Basic Machine Learning Research in Life Science, Novo Nordisk Foundation

Related study programmes, doctoral or master levels

- MSc Computer Science, University of Copenhagen
- MSc Statistics, University of Copenhagen






Research node:
Creative AI Lab

Directors:
Prof. Sebastian Risi

Year of establishment:
2020

Number of researchers:
11-20

Parent organizations:
IT University of Copenhagen

Contact information:

Topics of expertise

Human interfaces, intelligent robotics, machine learning, multi-agent systems

Selected publications, peer-reviewed

- R. Palm, M. Duque, S. Sudhakaran, S. Risi, "Variational neural cellular automata", ICLR, 2022
- S. Sudhakaran, D. Grbic, S. Li, A. Katona, E. Najarro, C. Glanois, S. Risi, "Growing 3D artefacts and functional machines with neural cellular automata", ALIFE, 2020
- E. Najarro, S. Risi "Meta-learning through Hebbian plasticity in random networks", NeurIPS, 2020
- S. Risi, J. Togelius, "Increasing generality in machine learning through procedural content generation", Nature Machine Intelligence, vol. 2, pp. 428–436, 2020
- V. Volz, J. Schrum, J. Liu, S. M. Lucas, A. M. Smith, S. Risi, "Evolving Mario levels in the latent space of a DCGAN", GECCO, ACM, 2018
- M. González-Duque, R. Palm, S. Hauberg, S. Risi, "Mario plays on a manifold: Generating functional content in latent space through differential geometry", Conference on Games (CoG), 2022

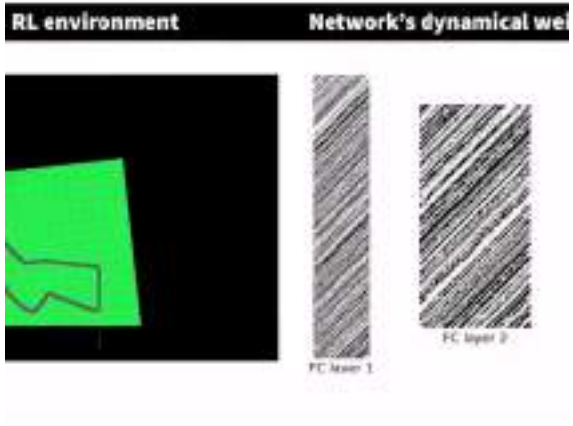
Selected projects, funded by the European Commission or national agencies

- INNATE "Adaptive Machines for Industrial Automation", DFF Sapere Aude, 2020-2024
- QD2L "Improving Generalisation in Deep Learning through Quality Diversity", DFF Project 1, 2020-2023
- Flora Robotica "Societies of Symbiotic Robot-Plant Bio-Hybrids as Social Architectural Artifacts", FET Proactive, 2015-2019

Related study programmes, doctoral or master levels

- MSc in Games, IT University of Copenhagen


3D Morphogenes


RL environment
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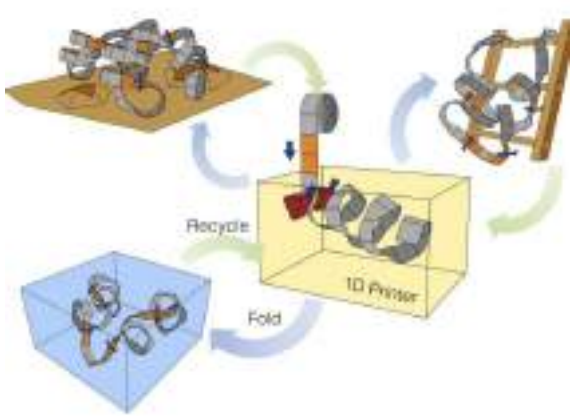

Recycle
3D Printer
Fold

ARCADA

Research node:
Laboratory for Trustworthy AI

Directors:
Dr. Magnus Westerlund
Dr. Henrika Franck

Year of establishment:
2021

Number of researchers:
1-10

Parent organizations:
Arcada University of Applied Sciences

Contact information:

Topics of expertise

Ethical AI

Selected publications, peer-reviewed

- R. V. Zicari, M. Westerlund, et al., "Z-Inspection®: A Process to Assess Trustworthy AI" IEEE Transactions on Technology and Society, vol. 2, no. 2, pp. 83-97, 2021
- R. V. Zicari, M. Westerlund, et al., "On Assessing Trustworthy AI in Healthcare. Machine Learning as a Supportive Tool to Recognize Cardiac Arrest in Emergency Calls" Front. Hum. Dyn., 2021
- R. V. Zicari, M. Westerlund, et al., "Co-Design of a Trustworthy AI System in Healthcare: Deep Learning Based Skin Lesion Classifier" Front. Hum. Dyn., 2021
- B. Düdder, F. Möslein, N. Stürtz, M. Westerlund, and R.V. Zicari, "Ethical maintenance of artificial intelligence systems" Artificial Intelligence for Sustainable Value Creation, Edward Elgar Publishing, 2021

Selected projects, funded by the European Commission or national agencies

- "AI driven Nordic Health and Welfare", Ministry of Education (grant no. OKM/6/524/2020), 2021 – 2023

Related study programmes, doctoral or master levels

- MEng in Big Data Analytics, Arcada University of Applied Sciences


Time to shine

Research node:
ELLIS Unit Helsinki

Directors:
Professor Samuel Kaski

Year of establishment:
2019

Number of researchers:
11-20

Parent organizations:
Aalto University

Helsinki University

Contact information:

Topics of expertise

ethical AI, human interfaces, machine learning, multi-agent systems, computer vision, reasoning under uncertainty

Selected publications, peer-reviewed

- A.Ghadirzadeh, P. Poklukar, K. Arndt, C. Finn, V. Kyrki, D. Kragic, M. Björkman Training and evaluation of deep policies using reinforcement learning and generative models, The Journal of Machine Learning Research,vol. 23, no 1, pp. 7860-7896, 1/2022
- G. Riutort-Mayol, P-C Bürkner, M R. Andersen, A Solin & A Vehtari Practical Hilbert space approximate Bayesian Gaussian processes for probabilistic programming, Statistics and Computing, vol. 33, no 17, 12/2022
- T. Karras, M. Aittala, S. Laine, E. Härkönen, J. Hellsten, J. Lehtinen, T. Aila Alias-Free Generative Adversarial Networks, Advances in Neural Information Processing Systems (Proc. NeurIPS) 2021
- O. Räisä, J. Jälkö, S. Kaski, A. Honkela Noise-Aware Statistical Inference with Differentially Private Synthetic Data, Proceedings of The 26th International Conference on Artificial Intelligence and Statistics, PMLR vol. 206, pp. 3620-3643, 2023
- S. . De Peuter, A. Oulasvirta, S. Kaski Toward AI assistants that let designers design AI Magazine, vol 44, no 1, pp. 85-96, 3/2023
- H.-S. Moon1, A Oulasvirta, B Lee Amortized Inference with User Simulations, Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems, 4/2023

Selected projects, funded by the European Commission or national agencies

- ELISE - European Network of AI Excellence Centres, European Union's Horizon 2020 research and innovation programme, grant agreement No 951847, 2021-2024
- Finnish Center for Artificial Intelligence FCAI , Research Council of Finland Flagship programme, 2019-2026

Related study programmes, doctoral or master levels

- Data Science, Bachelor of Science (Technology), Master of Science (Technology), Aalto University
- The Doctoral Programme in Computer Science, University of Helsinki






scai
SORBONNE CENTER FOR ARTIFICIAL INTELLIGENCE

Research node:
Sorbonne Center for Artifical Intelligence-SCAI

Directors:
Prof. Gérard Biau
Dr. Xavier Fresquet

Year of establishment:
2019

Number of researchers:
101+

Parent organizations:
Sorbonne University

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, cognition and AI, commonsense reasoning, computer vision, constraint processing, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- H. Touvron, M. Cord, M. Douze, F. Massa, A. Sablayrolles, H. Jégou, "Training data-efficient image transformers & distillation through attention", ICML (PMLR 139), pp. 10347-10357, 2021
- A. B. Arrieta, et al., "Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI", Information Fusion, vol. 58, pp. 82-115, 2022
- Y. Yin, V. Le Guen, J. Dona, E. de Bézenac, I. Ayed, N. Thome, P. Gallinari, "Augmenting physical models with deep networks for complex dynamics forecasting", J. Stat. Mech., pp. 124012, 2021
- C. Koudoro-Parfait, G. Lejeunce, G. Roe, "Spatial Named Entity Recognition in Literary Texts: What is the influence of OCR Noise?", GeoHumanities, pp. 13-21, 2021
- P. Esling, N. Masuda, A. Bardet, R. Despres, A. Chemla-Romeu-Santos, "Universal audio synthesizer control with normalizing flows", DAFx, 2019
- T. Bottini, V Julliard, "Entre informatique et sémiotique. Les conditions techno-méthodologiques d'une analyse de controverse sur Twitter" Réseaux, no. 204, pp. 36-69, 2017

Selected projects, funded by the European Commission or national agencies

- MAESTRIA "Machine learning and Artificial Intelligence for Early Detection of Stroke and Atrial Fibrillation", European Commission (grant no. 965286), 2021-2026
- Humane AI Net "European network of human-centered articficial intelligence", European Commission (grant no. 952026), 2022-2023
- MustArt "Multiparametric Strategies against Antibiotic Resistance in Tuberculosis", ANR, 2021-2025
- OT4D "Optical Twin for Diagnosis", ANR, 2021-2025

Related study programmes, doctoral or master levels

- Master degree in Mathematics and/or Computer Science (speciality "M2A", "Androide" and "Data Science Paris-DAC")
- Doctoral program grouping more than 100 PhD supervisors spread across 20+ laboratories


FAROS


SPEED DATING
STAGE 1A

Research node:

Lab for Artificial Intelligence in Medical Imaging (AI-Med)

Directors:

Prof. Christian Wachinger

Year of establishment:

2017

Number of researchers:

1-10

Parent organizations:

Technical University of Munich

Ludwig Maximilian University of Munich

Contact information:

Topics of expertise

Cognition and AI, computer vision, machine learning

Selected publications, peer-reviewed

- F. Bongratz, A. Rickmann, S. Pölsterl, C. Wachinger, "Vox2Cortex: Fast explicit reconstruction of cortical surfaces from 3D MRI scans with geometric deep neural networks", IEEE CVPR, 2022
- C. Wachinger, A. Rieckmann, S. Pölsterl, "Detect and correct bias in multi-site neuroimaging datasets, medical image analysis, vol. 67, 2021
- B. Gutierrez, I. Sarasua, C. Wachinger, "Discriminative and generative models for anatomical shape analysis on point clouds with deep neural networks", Medical Image Analysis, 2021
- A. Guha Roy, S. Conjeti, N. Navab, C. Wachinger, "Bayesian QuickNAT: Model uncertainty in deep whole-brain segmentation for structure-wise quality control", NeuroImage, vol. 195, pp. 11-22, 2019
- A. Guha Roy, N. Navab, C. Wachinger, "Recalibrating fully convolutional networks with spatial and channel squeeze & excitation blocks", IEEE Transactions on Medical Imaging, 2018
- C. Wachinger, D. Salat, M. Weiner, M. Reuter, "Whole-brain analysis reveals increased neuroanatomical asymmetries in dementia for hippocampus and amygdala", Brain, vol. 139, no. 12, pp. 3253-3266, 2016

Selected projects, funded by the European Commission or national agencies

- DeepMentia "Deep Learning for the Differential Diagnosis of Dementia from Multi-Modal Neuroimaging Data", BMBF, Computational Life Sciences, 2020-2023
- CompPop "Computational Population Modelling from Big Medical Image Data", Bavarian Government, 2017-2022
- AbdominalMeshes "Multi-organ Abdominal Segmentation with Mesh-Based Bayesian Neural Networks", DFG, 2022-2025

Related study programmes, doctoral or master levels

- Graduate school, Center for Doctoral Studies in Informatics and its Applications
- Master programme, Biomedical Computing

AI Society Lab

Alexander von Humboldt Institut für Internet und Gesellschaft

Research node:
AI & Society Lab

Directors:
Prof. W.Schulz, Prof. J.Hofmann
Prof. T. Schildhauer
Prof. B. Scheuermann

Year of establishment:
2020 (Lab), 2022 (HIIG)

Number of researchers:
1-10

Parent organizations:
Alexander von Humboldt Institute for Internet and Society

Contact information:

Topics of expertise

Natural language processing, ethical AI

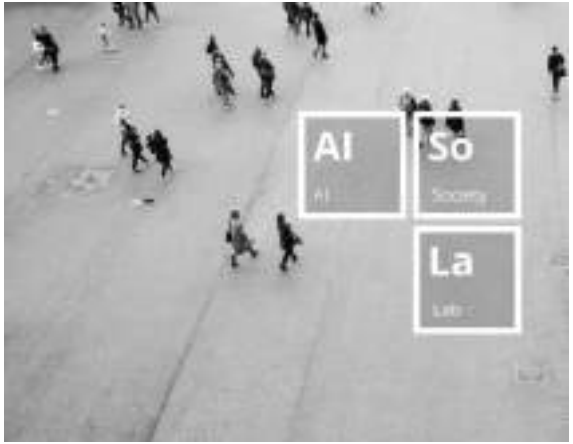
Selected publications, peer-reviewed

- H. Asghari, T. van Biemen, M. Warnier, "Amplifying privacy: Scaling up transparency research through delegated access requests", Workshop on Technology and Consumer Protection (ConPro), 2021
- F. Hewett, M. Stede, "Automatically evaluating the conceptual complexity of German texts", Conference on Natural Language Processing (KONVENS), pp. 228–234, 2021
- A. Bernstein, C. Vreese, N. Helberger, W. Schulz, K. Zweig, C. Baden, T. Züger, "Diversity in news recommendation", Cornell University, 2020

Selected projects, funded by the European Commission or national agencies

- Public Interest AI research group, BMBF, 2022-2024

Related study programmes, doctoral or master levels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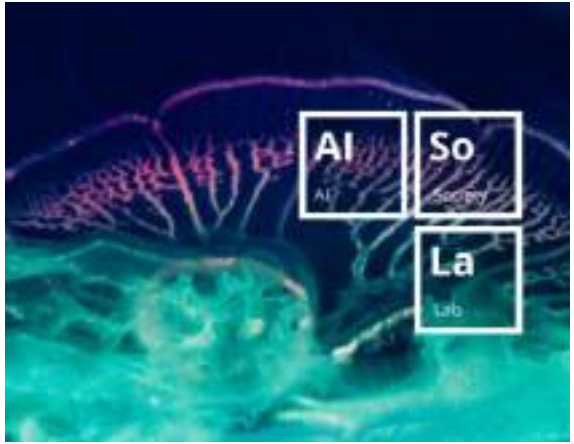
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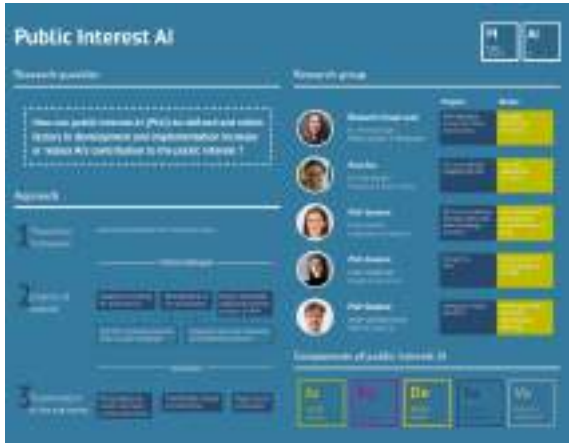

Public Interest AI

Research node:

Würzburg Centre for Social Implications of Artificial Intelligence (SOCAI)

Directors:

Dr. David Roth-Isigkeit

Year of establishment:

2019

Number of researchers:

1-10

Parent organizations:

Julius-Maximilians Universität of Würzburg (JMU)

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, computer vision, ethical AI, human interfaces, intelligent robotics, knowledge representation, machine learning, reasoning under uncertainty

Selected publications, peer-reviewed

- D. Roth-Isigkeit, "Social Implications of Artificial Intelligence-A Research Programme on Digital Transformation (engl.)"
- L.K. Müller, "Just Artificial Intelligence?-Research Paper No. 2 (eng.)"
- D. Roth-Isigkeit, "Global Information Law: How to enhance the Legitimacy of the Information Order In and Beyond the State?-Research Paper No. 3"

Selected projects, funded by the European Commission or national agencies

Related study programmes, doctoral or master levels


UNIVERSITÄT WÜRZBURG
Impact of Technological Advances on Individuals: Interaction of Law & Informatics

SOC/AI


Motivation
diem
shopify
lyft
coinbase
PayU


JIPITEC
4 | 2021

Research node:
TUM Institute for Ethics in Artificial Intelligence

Directors:
Prof. Dr. Christoph Lütge

Year of establishment:
2019

Number of researchers:
11-20

Parent organizations:
Technical University of Munich

Contact information:

Topics of expertise
Ethical AI

Selected publications, peer-reviewed

- A. L. Hunkenschroer C. Lütge, "Ethics of AI-Enabled Recruiting and Selection: A Review and Research Agenda", Journal of Business Ethics, 2022
- C. Lütge, et al., "AI4People: Ethical Guidelines for the Automotive Sector-Fundamental Requirements and Practical Recommendations", vol. 12, no. 1, pp. 101-125, 2021
- M. Geisslinger, et al, "Autonomous Driving Ethics: from Trolley Problem to Ethics of Risk", Philosophy and Technology, 2021
- A. Kriebitz, C. Lütge, "Artificial Intelligence and Human Rights: A Business Ethical Assessment", Business and Human Rights Journal, vol. 5, no. 1, pp 84-104, 2020
- A. Peine, et al., "Künstliche Intelligenz und maschinelles Lernen in der intensivmedizinischen Forschung und klinischen Anwendung", Anästhesiologie & Intensivmedizin, 2020
- M. Kochupillai, et al. "Programming Away Human Rights and Responsibilities? "The Moral Machine Experiment" and the Need for a More "Humane" AV Future", Nano Ethics, vol. 14, pp. 285-299, 2020

Selected projects, funded by the European Commission or national agencies

- MELISSA "MobilE artificiaL Intelligence Solution for DiabeteS Adapted care", European Commission, (HORIZON-HLTH-2021-DISEASE-04-04), 2022-2026
- AI4EO "Artificial Intelligence for Earth Observation: Reasoning, Uncertainties, Ethics and Beyond", German Federal Ministry of Education and Research (BMBF)

Related study programmes, doctoral or master levels

- Masters of Science and Technology Studies, Technical University of Munich
- Masters of Politics and Technology, Technical University of Munich

▲ Hochschule Harz
Harz University of Applied Sciences

Research node:
Artificial Intelligence Research Group

Directors:
Prof. Dr. Frieder Stolzenburg

Year of establishment:
2003

Number of researchers:
1-10

Parent organizations:
Harz University of Applied Sciences

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, commonsense reasoning, computer vision, intelligent robotics, knowledge representation, machine learning, multi-agent systems

Selected publications, peer-reviewed

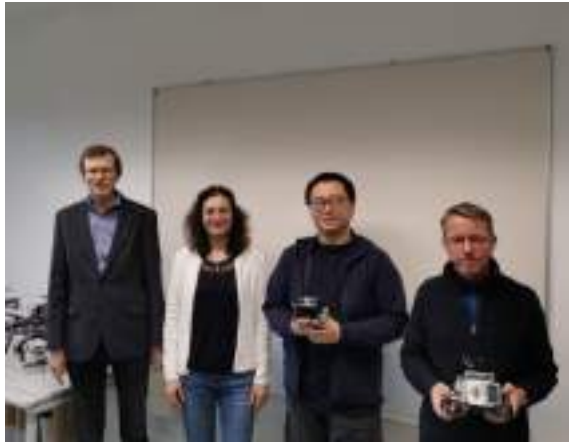
- C. Schon, S. Siebert, F. Stolzenburg, "Negation in cognitive reasoning", Advances in Artificial Intelligence, German Conference on AI, LNAI 12873, pp. 217-232, Springer, 2021
- S. Krause, O. Otto, F. Stolzenburg, "Fast classification learning with neural networks and conceptors for speech recognition and car driving maneuvers", Multi-Disciplinary Intl. Conf. Artificial Intelligence (MIWAI), LNAI 12832, pp 45-57, 2021
- S. Siebert, C. Schon, F. Stolzenburg, "Commonsense reasoning using theorem proving and machine learning", International Cross-Domain Conference (CD-MAKE), LNCS 11713, pp. 395-413, 2019
- U. Furbach, S. Hölldobler, M. Ragni, C. Schon, F. Stolzenburg, "Cognitive reasoning: A personal view", KI, vol. 33, no. 3, pp. 209-217, 2019
- O. Michael, O. Obst, F. Schmidsberger, F. Stolzenburg, "Analysing soccer games with clustering and conceptors", RoboCup International Symposium, LNAI 11175, pp. 120--131, 2018
- C.-P. Wirth, F. Stolzenburg, "A series of revisions of David Poole's specificity", Annals of Mathematics and Artificial Intelligence (Special issue on Belief Change and Argumentation in Multi-Agent Scenarios), vol. 78, no. 3, pp.205-258, 2016

Selected projects, funded by the European Commission or national agencies

- AiEng "An interdisciplinary, project-oriented degree program with an educational focus on artificial intelligence and engineering sciences", BMBF (grant no. 16DHBKI010", 2021-2025
- WeedAI "Intelligent UAV-Based Weed Monitoring System for Selective and Site-Specific Herbicide Application", BLE (grant no. 28DK105B20), 2021-2024
- CoRg "Cognitive Reasoning", DFG (grant no. Sto421/8-1), 2018-2021
- Decorating "DEep COnceptors for tempoRal dATa mINinG", DAAD (grant no. DAAD-PPP 57319564), 2017-2018

Related study programmes, doctoral or master levels

- PhD (Dr. rer.nat or Dr.-Ing.) in Engineering and Information Technologies, Harz University of Applied Sciences
- M.Sc. Technology and Innovation Management, Harz University of Applied Sciences


ERKENNUNG




JOINT ARTIFICIAL INTELLIGENCE INSTITUTE

Research node:

Joint Artificial Intelligence Institute

Directors:

Prof. P. Cimiano

Prof.A.Ngonga, Prof.B.Hammer

Prof. H. Wachsmuth

Year of establishment:

2020

Number of researchers:

101+

Parent organizations:

Bielefeld University

Paderborn University

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action

Selected publications, peer-reviewed

- K. J. Rohlfing, et al., "Explanation as a social practice: Toward a conceptual framework for the social design of AI systems". IEEE Trans. Cogn. Dev. Syst., vol. 13, no. 3, pp. 717-728, 2021
- D. Caglar, D. Moussallem, S. Heindorf, A.-C. Ngonga Ngomo. "Convolutional hypercomplex embeddings for link prediction." Asian Conference on Machine Learning, pp. 656-671. PMLR, 2021
- S. Heindorf, Y. Scholten, H. Wachsmuth, A. Ngonga, M. Potthast "CauseNet: Towards a causality graph extracted from the web". CIKM, pp. 3023-3030, 2020
- J. Gaspers, et al., "Constructing a language from scratch: Combining bottom-up and top-down learning processes in a computational model of language acquisition", IEEE Trans. Cogn. Dev. Syst., vol. 9, no. 2, pp. 183-196, 2017
- J. Ax, et al., "CoreVA-MPSoC: A Many-core architecture with tightly coupled shared and local data memories", IEEE Trans. Parallel Distributed Syst., vol. 29, no. 5, no. 1030-1043, 2018

Selected projects, funded by the European Commission or national agencies

- TRR318 "Constructing Explainability", Deutsche Forschungsgemeinschaft (Transregional Collaborative Research Centre and Research Training Group), 2021-2025
- DataNinja "Trustworthy AI for Seamless Problem Solving", Ministerium für Kultur und Wissenschaft des Landes Nordrhein-Westfalen (Künstliche Intelligenz / Maschinelles Lernen), 2021-2025
- "RailCampus OWL", Ministerium für Heimat, Kommunales, Bau und Gleichstellung des Landes Nordrhein-Westfalen (REGIONALE 2022), 2020-2024
- MSCA ITN KnowGraphs, European Commission (Horizon 2020), 2019-2023

Related study programmes, doctoral or master levels

- Ph.D. in Intelligent Systems, Bielefeld University
- Master of Computer Science, Focus Area Intelligence and Data, Paderborn University


ROS

Research node:
Artificial Intelligence Group

Directors:
Prof. Dr. Andreas Dengel

Year of establishment:
1993

Number of researchers:
21-50

Parent organizations:
Technische Universität Kaiserslautern

Technical University of Kaiserslautern

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, computer vision, cognition and AI, constraint processing, ethical AI, human interfaces, knowledge representation, machine learning, multi-agent systems

Selected publications, peer-reviewed

- A. Guzhov, F. Raue, J. Hees, A. Dengel, "ESResNet: Environmental sound classification based on visual domain models", International Conference on Pattern Recognition (ICPR 2020). IEEE, 2021
- C. Edlund, T. R. Jackson, N. Khalid, N. Bevan, T. Dale, A. Dengel, S. Ahmed, J. Trygg, R. Sjörgen, "LIVECELL-A large-scale dataset for label-free live cell segmentation", Nature Methods, Springer, 2021
- B. Bischke, P. Helber, J. Folz, D. Borth, A. Dengel, "Multi-task learning for segmentation of building footprints with deep neural networks", IEEE International Conference on Image Processing (ICIP), pp. 1480-1484, 2019
- M. Munir, S. A. Siddiqui, A. Dengel, S. Ahmed, "DeepAnT: A deep learning approach for unsupervised anomaly detection in time series", IEEE Access, vol. 7, pp. 1991-2005, 2018
- S. Schreiber, S. Agne, I. Wolf, A. Dengel, S. Ahmed, "Deepdesrt: Deep learning for detection and structure recognition of tables in document images", IAPR International Conference on Document Analysis and Recognition (ICDAR), 2017
- S. Jolly, Z. Xuan, A. Dengel, and L. Mou, "Search and learn: Improving semantic coverage for data-to-text generation", AAAI Conference on Artificial intelligence, 2022

Selected projects, funded by the European Commission or national agencies

- DeFuseNN "Deep Fusion für Neuronale Netze", Bundesministerium für Bildung und Forschung (grant no. 01IW17002), 2017-2020
- SensAI "Self-organizing Personal Knowledge Assistants in Evolving Corporate Memories", Bundesministerium für Bildung und Forschung (grant no. 01IW20007), 2020-2023
- ExplAINN "Explainable AI and Neural Networks", Bundesministerium für Bildung und Forschung (grant no. 01IS19074), 2019-2022
- XAINES "KI mit Narrativen erklären", Bundesministerium für Bildung und Forschung (grant no. 01IW20005), 2020-2024

Related study programmes, doctoral or master levels

- Machine Intelligence and Deep Learning Graduate School, University of Kaiserslautern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INTELLIGENZ

FH·W·S

CAIRO

Research node:

Center for Artificial Intelligence and Robotics

Directors:

Prof. Dr. Magda Gregorová

Prof. Dr. Frank-Michael Schleif

Year of establishment:

2021

Number of researchers:

1-10

Parent organizations:

University of Applied Sciences Würzburg-Schweinfurt

Contact information:

Topics of expertise

Cognition and AI, intelligent robotics, knowledge representation, machine learning, reasoning under uncertainty

Selected publications, peer-reviewed

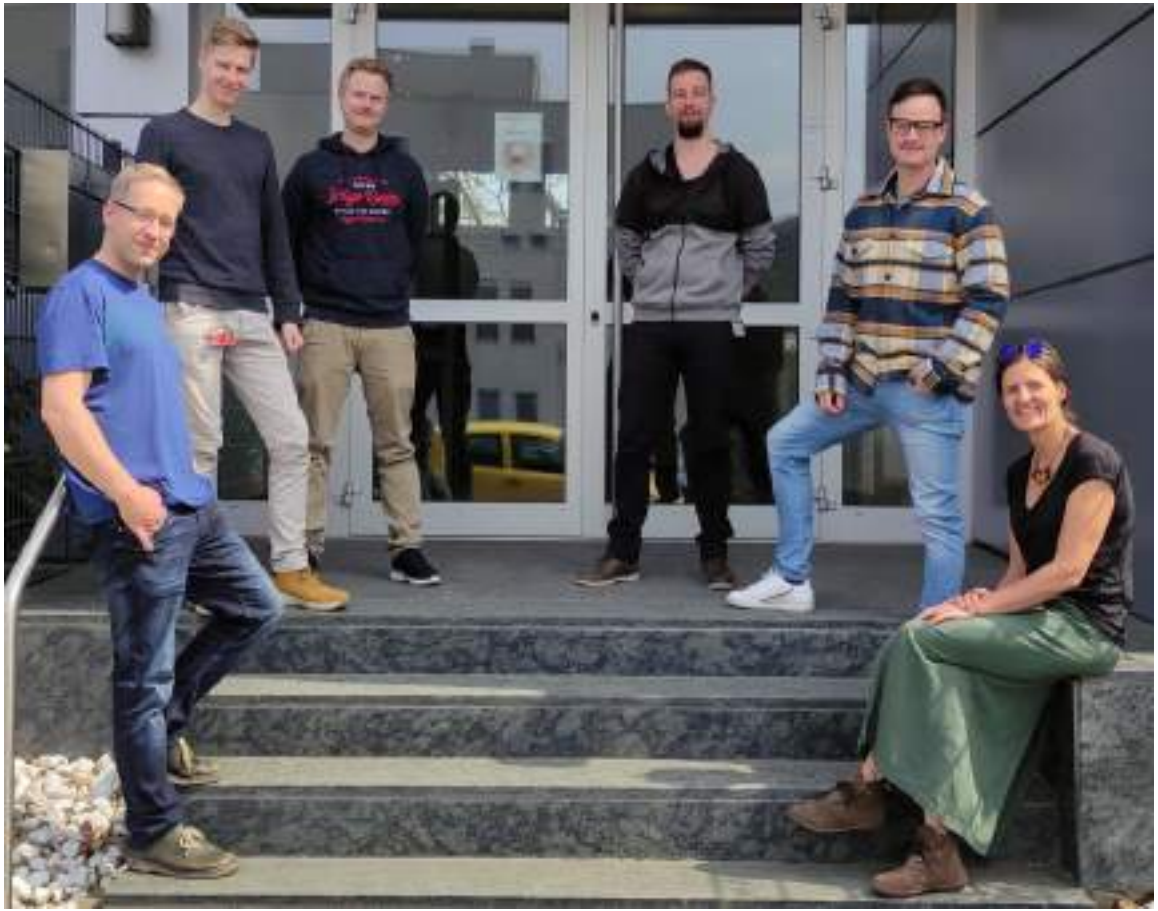
- M. Gregorova, M. Desaules and A. Kalousis, “Learned transform compression with optimized entropy encoding”, International Conference on Learning Representations (ICLR), Workshop Neural Compression, 2021
- M. Münch, et al., "Complex-valued embeddings of generic proximity data”, Joint IAPR International Workshops on Statistical Techniques in Pattern Recognition (SPR) and Structural and Syntactic Pattern Recognition (SSPR), pp. 14-23, 2021
- M. Münch, S. Heilig, P. Väth, F.-M. Schleif, "Scalable embedding of multiple perspectives for indefinite life-science data analysis”, IEEE Symposium Series on Computational Intelligence (SSCI), pp. 1-8, 2021
- Y. Boget, M. Gregorova, A. Kalousis, "Permutation equivariant generative adversarial networks for graphs”, ELLIS Machine Learning for Molecule Discovery Workshop, 2021
- S. Heilig, M. Münch, F.-M. Schleif, "Revisiting Memory Efficient Kernel Approximation: An Indefinite Learning Perspective", International Joint Conference on Neural Networks (IJCNN), 2022

Selected projects, funded by the European Commission or national agencies

- KI-HUB Nordbayern “Knowledge transfer network on digitilization and artificial intelligence”
- FlowPro “Micro-logistics of the future with decentrally organised ground- and air-bound autonomous conveying units”

Related study programmes, doctoral or master levels

- Master’s Degree Artificial Intelligence



JÜLICH Forschungszentrum
HELMHOLTZ AI

Research node:

Helmholtz AI Research Group "AI for decoding human brain organization"

Directors:

Prof. Dr. Timo Dickscheid

Year of establishment:

2020

Number of researchers:

11-20

Parent organizations:

Inst. Neuroscience & Medicine, Structural & functional organisation of the brain INM-1

Forschungszentrum Jülich

Contact information:

Topics of expertise

Computer vision, machine learning

Selected publications, peer-reviewed

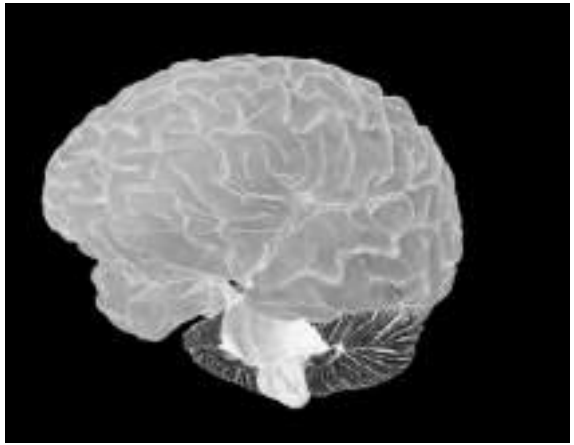
- E. Upschulte, S. Harmeling, K. Amunts, T. Dickscheid, "Contour proposal networks for biomedical instance segmentation", Medical Image Analysis, pp. 102371, 2022
- C. Schiffer, et al., "Convolutional neural networks for cytoarchitectonic brain mapping at large scale", Neuroimage, vol. 240, pp. 118327, 2021
- K. Amunts, et al., "BigBrain: An ultrahigh-resolution 3D human brain model", Science, vol. 340, no. 6139, pp. 1472-1475, 2013
- C. Schiffer, S. Harmeling, K. Amunts, T. Dickscheid, "2D histology meets 3D topology: Cytoarchitectonic brain mapping with graph neural networks", Medical Image Computing and Computer Assisted Intervention (MICCAI), pp. 395-404, 2021
- H. Spitzer, K. Kiwitz, K. Amunts, S. Harmeling, T. Dickscheid, "Improving cytoarchitectonic segmentation of human brain areas with self-supervised siamese networks", Medical Image Computing and Computer Assisted Intervention, 2018
- E. Vaca, M. Menzel, K. Amunts, M. Axer, T. Dickscheid, "GORDA: Graph-Based Orientation Distribution Analysis of SLI Scatterometry Patterns of Nerve Fibres", 2022 IEEE 19th International Symposium on Biomedical Imaging (ISBI), 2022, doi: 10.1109/ISBI52829.2022.9761492

Selected projects, funded by the European Commission or national agencies

- HBP "Human Brain Project", European Commission (Horizon 2020, grant no. 945539, Human Brain Project SGA3), 2020-2023
- HIBALL "Helmholtz International BigBrain Analytics and Learning Laboratory", Helmholtz Association's Initiative and Networking Fund (grant no. InterLabs-0015), 2020-2025
- "Computational Connectomics", German Research Foundation (Priority Program 2041 (SPP 2041))

Related study programmes, doctoral or master levels

- Master's programme AI and Data Science, Heinrich Heine Universität Düsseldorf, Germany






ML2R

Research node:

Competence Center Machine Learning Rhine-Ruhr

Directors:

Prof. Katharina Morik

Prof. Stefan Wrobel

Year of establishment:

2018

Number of researchers:

51-100

Parent organizations:

TU Dortmund Univ.,
Fraunhofer Inst. for Intelligent Analysis and Information Systems (IAIS)
University of Bonn, Fraunhofer Inst. for Material Flow and Logistics (IML)

Contact information:

Topics of expertise

Ethical AI, intelligent robotics, knowledge representation, machine learning, natural language processing, reasoning under uncertainty

Selected publications, peer-reviewed

- S. Mücke, N. Piatkowski, K. Morik, "Hardware accelerated learning at the edge", DMLE workshop ECML PKDD, 2019
- P. Welke, F. Alkhoury, C. Bauckhage, S. Wrobel, "Decision snippet features", Int. Conf. on Pattern Recognition (ICPR), pp. 4260-4267, 2020
- L. Hillebrand, D. Biesner, C. Bauckhage, R. Sifa, "Interpretable topic extraction and word embedding learning using non-negative tensor DEDICOM", CD-MAKE, Machine Learning and Knowledge Extraction, vol. 2, pp. 401-422, 2021
- L. von Rüden, et al., "Informed machine learning-A taxonomy and survey of integrating prior knowledge into learning systems", IEEE Transactions on Knowledge and Data Engineering (early access)
- C. Ojeda, K. Cvejoski, B. Georgiev, C. Bauckhage, J. Schuecker, R. J. Sanchez, "Learning deep generative models for queuing systems", AAAI Conf. on Artificial Intelligence, vol. 35, no. 10, pp. 9214-9222, 2021
- S. Buschjäger, P.-J. Honysz, L. Pfahler, K. Morik, "Very fast streaming submodular function maximization", ECML PKDD, Machine Learning and Knowledge Discovery in Databases, pp. 151-166, 2021

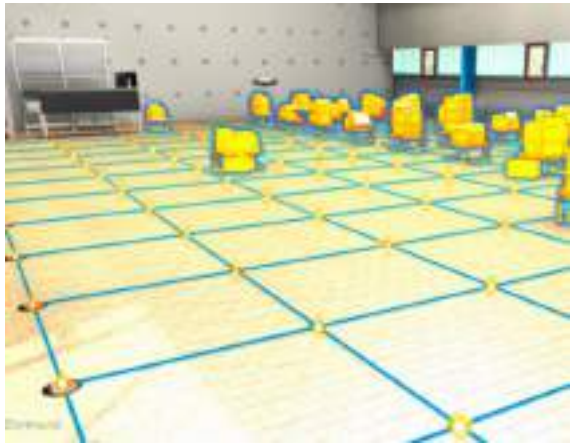
Selected projects, funded by the European Commission or national agencies

- Collaborative Research Center 876 "Providing Information by Resource-Constrained Data Analysis", German Research Foundation DFG, 2011-2022
- AI4Media "A European Excellence Centre for Media, Society and Democracy", European Commission (grant no. 951911), 2020-2024
- EUROBENCH "EUropean ROBotic framework for bipedal locomotion bENCHmarking", European Commission (grant no. 779963), 2018-2022
- SoBigData++ "European Integrated Infrastructure for Social Mining and Big Data Analytics", European Commission (grant no. 871042), 2020-2024

Related study programmes, doctoral or master levels

- M.Sc. in Data Science, TU Dortmund University
- M.Sc. in Media Informatics, Bonn-Aachen International Center for Information Technology (b-it)


ML2R



ScaDS.AI
DRESDEN LEIPZIG

Research node:

Center for scalable Data Analytics and Artificial Intelligence (ScaDS.AI Dresen/Leipzig)

Directors:

Prof. Dr. Wolfgang E. Nagel

Prof. Dr. Erhard Rahm

Year of establishment:

2014

Number of researchers:

101+

Parent organizations:

Technische Universität Dresden

Universität Leipzig

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, knowledge representation, machine learning, natural language processing

Selected publications, peer-reviewed

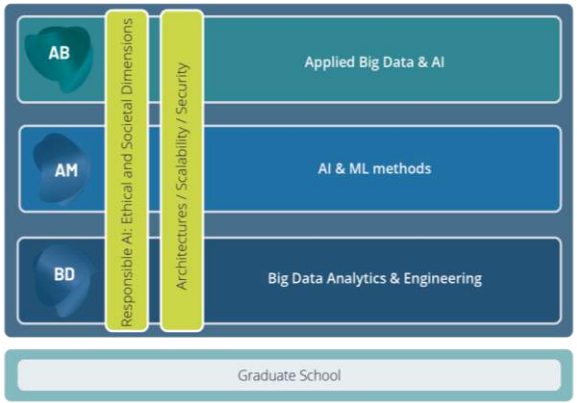
- Ajjour, Y., et al., "Data Acquisition for Argument Search: The args.me corpus", Advances in AI, Lecture Notes in Computer Science, vol. 11793, Springer, pp. 48-59, 2019 (Best Paper)
- R. Baumann, et. al., "Revisiting the foundations of abstract argumentation-semantics based on weak admissibility and weak defense", AAAI Conference on Artificial Intelligence, vol. 34, no. 3, pp. 2742-2749, 2020
- C. Rost, K. Gómez, M. Täschner, P. Fritzsche, L. Schons, T. Adameit, M. Junghans, E. Rahm, "Distributed temporal graph analytics with GRADOOP", The VLDB Journal, vol. 3, pp. 375–401, 2021
- J. Lehmann, et. al., "Dbpedia: A large-scale, multilingual knowledge base extracted from Wikipedia", Semantic Web Journal, vol. 6, no. 2, pp. 167–195, 2015 (SWJ Outstanding Paper Award)
- F. Baader, J. Rydval, "Description logics with concrete domains and general concept inclusions revisited", Int. Joint Conf. on Automated Reasoning (IJCAR), Springer LNCS 12166, pp. 413-431, 2020
- Höppner, S., Vogginger, B., Yan, Y., & Mayr, C., "Dynamic power management for neuromorphic many-core systems", IEEE Transactions on Circuits and Systems I: Regular Papers, 66(8), pp. 2973-2986, 2019

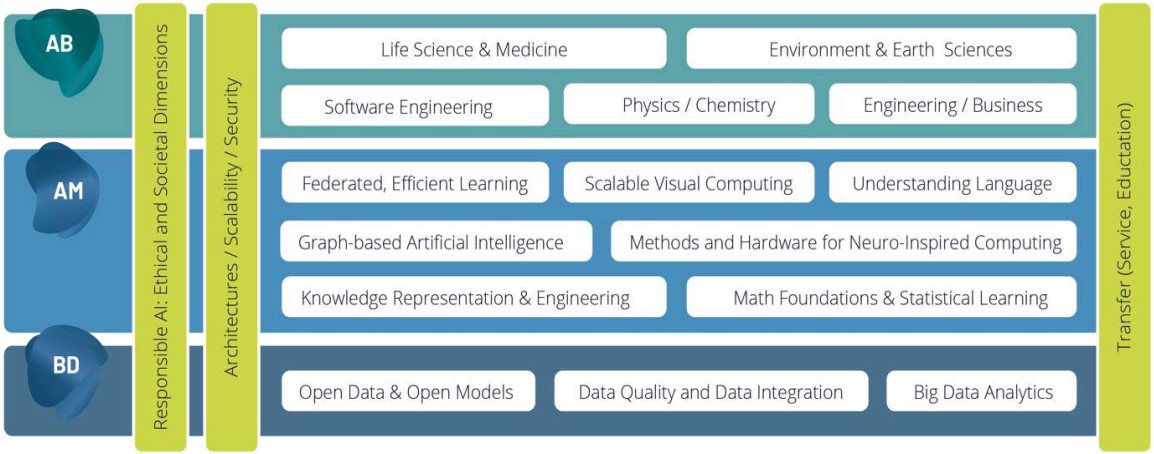
Selected projects, funded by the European Commission or national agencies

- SaxoCell Omics" & "Saxo Cell Systems", BMBF, 03ZU1111MB / 03ZU1111NC, 2021 – 2024
- VIP "Visual Product Matching", EFRE/SAB, 2019-2022
- "Open-GPT-X", Gaia-X Förderwettbewerb, 22/2021-2024
- TWIN, "Transformation komplexer produktentstehungsprozesse in wissensbasierte services für die generative fertigung, BMBF 02K18D055, 2019-2022

Related study programmes, doctoral or master levels

- Computational Modelling and Simulation, Technische Universität Dresden (Master's programme)
- Data Science, University of Leipzig (Master's programme)


AB
AM
BD
Responsible AI: Ethical and Societal Dimensions
Architectures / Scalability / Security
Applied Big Data & AI
AI & ML methods
Big Data Analytics & Engineering
Graduate School


AB
AM
BD
Responsible AI: Ethical and Societal Dimensions
Architectures / Scalability / Security
Life Science & Medicine
Environment & Earth Sciences
Software Engineering
Physics / Chimistry
Engineering / Business
Federated, Efficient Learning
Scalable Visual Computing
Understanding Language
Graph-based Artificial Intelligence
Methods and Hardware for Neuro-Inspired Computing
Knowledge Representation & Engineering
Math Foundations & Statistical Learning
Open Data & Open Models
Data Quality and Data Integration
Big Data Analytics
Transfer (Service, Eductation)

University of Stuttgart
Germany

Research node:
ELLIS Unit Stuttgart

Directors:
Andreas Bulling
Ingo Steinwart

Year of establishment:
2021

Number of researchers:
51-100

Parent organizations:
University of Stuttgart

Max Planck Institute for Intelligent Systems

Contact information:

Topics of expertise

Interactive Intelligent Systems, Natural and Programming Language Processing, Learning Theory, Robot Learning

Selected publications, peer-reviewed

- B. Khojasteh, F. Solowjow, S. Trimpe, and K.J. Kuchenbecker, "Multimodal Multi-User Surface Recognition with the Kernel Two-Sample Test", IEEE Transactions on Automation Science and Engineering, early access, 2023
- B. Xiong, S. Zhu, N. Potyka, S. Pan, C.Zhou, and S. Staab, "Pseudo-Riemannian Graph Convolutional Networks“, Neural Information Processing Systems (NeurIPS), 2022.
- A. Robey, L.F.O. Chamon, G.J. Pappas, H. Hassani, and A. Ribeiro, "Adversarial robustness with semi-infinite constrained learning", Neural Information Processing Systems (NeurIPS), 2021
- S. Fischer and I. Steinwart, "Sobolev norm learning rates for regularized least-squares algorithm", Journal of Machine Learning Research, 205, 1-38, 2020
- M. Pradel and K. Sen, "Deepbugs: A learning approach to name-based bug detection",Proceedings of the ACM on Programming Languages 2 (OOPSLA), 2018
- X. Zhang, Y. Sugano, M. Fritz, and A. Bulling, "MPIIGaze: Real-World Dataset and Deep Appearance-Based Gaze Estimation", IEEE Transactions on Pattern Analysis and Machine Intelligence, 41, 162-175, 2017

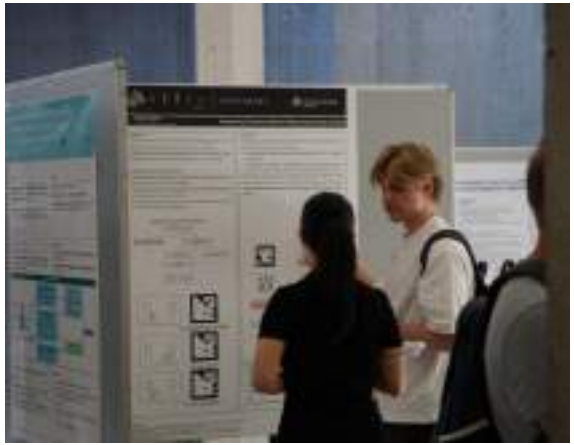
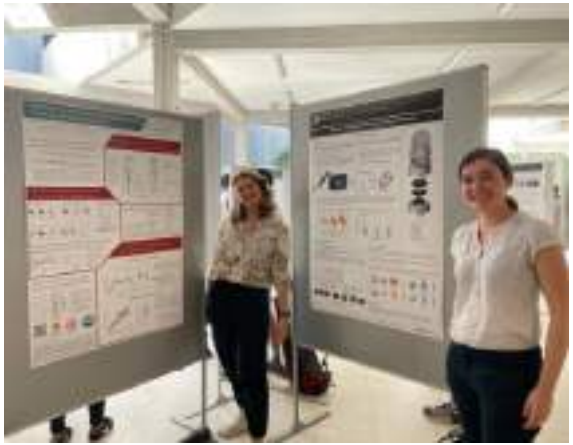
Selected projects, funded by the European Commission or national agencies

- FindBugs, “Learning to Find Software Bugs”, ERC Starting Grant (851895), 2020- 2025
- ANTICIPATE, “Anticipatory Human-Computer Interaction“, ERC Starting Grant (801708), 2019-2024
- SimTech, DFG Cluster of Intelligence, EXC2075, 2018-2025
- Eyes4ICU, “Eyes for Information, Communication, and Understanding”, European Commission (101072410), 2022-2026

Related study programmes, doctoral or master levels

- Graduate Academy of the University of Stuttgart (GRADUS), University of Stuttgart
- International Max Planck Research School for Intelligent Systems (IMPRS-IS), Universities of Stuttgart and Tübingen



e l l i s
UNIT
JENA

Research node:
ELLIS unit Jena

Directors:
Prof. Dr. Markus Reichstein
Prof. Dr. Joachim Denzler

Year of establishment:
2021

Number of researchers:
21-50

Parent organizations:
Max Planck Institute for Biogeochemistry, Friedrich Schiller University Jena, German Aerospace Center – Institute of Data Science

Contact information:

Topics of expertise

case-based reasoning, computer vision, knowledge presentation, machine learning

Selected publications, peer-reviewed

- M. Reichstein, G. Camps-Valls, B. Stevens, M. Jung, J. Denzler, N. Carvalhais, and Prabhat, "Deep learning and process understanding for data-driven Earth system science", Nature, 566, 195-204, 2019
- J. Runge, S. Bathiany, E. Bollt, D. Coumou, E. Deyle, C. Glymour, M. Kretschmer, M. D. Mahecha, J. Munoz-Mari, E. H. van Nes, J. Peters, R. Quax, M. Reichstein, M. Scheffer, B. Schoelkopf, P. Spirtes, G. Sugihara, J. Sun, K. Zhang and J. Zscheischler, "Inferring causation from time series in Earth system sciences", Nature Communications, 10, 2553, 2019.
- USMILE "Understanding and Modelling the Earth System with Machine Learning", European Commission (grant no. 855187), J. Cortés, M. D. Mahecha, M. Reichstein and A. Brenning "Accounting for multiple testing in the analysis of spatiotemporal environmental data, Environmental and Ecological Statistics", Environmental and Ecological Statistics, 27, 293-318, 2020.
- V. T. Trifunov, M. Shadaydeh, J. Runge, V. Eyring, M. Reichstein and J. Denzler "Nonlinear causal link estimation under hidden confounding with an application to time series anomaly detection", Pattern Recognition, DAGM GCPR 2019, edited by: G. A.
- .A. Tibau, C. Reimers, A. Gerhardus, J. Denzler, V. Eyring and J. Runge "A spatiotemporal stochastic climate model for benchmarking causal discovery methods for teleconnections", Environmental Data Science, 1, e12, 2022.
- K . Lawonn, M. Meuschke, P. Eulzer, M. Mitterreiter, J. Giesen and T. Gunther "RGRay Ray Casting for Visualization and Interactive Data Exploration of Gaussian Mixture Models", IEEE Trans Vis Comput Graph, 29(1), 526-536, 2023.

Selected projects, funded by the European Commission or national agencies

- ELIAS "European Lighthouse of AI for Sustainability" European Commission (grant no. 101120237), September 2023 - August 2027
- "Interactive Inference", CZS Breakthroughs, April 2022 - März 2028
- USMILE "Understanding and Modelling the Earth System with Machine Learning", European Commission (grant no. 855187), September 2020 - August 2026
- "Sensorized surgery: optically guided precision surgery through real-time AI-interpreted multimodal imaging with continuous sensory feedback", CZS Breakthroughs, April 2022 - März 2028

Related study programmes, doctoral or master levels

- International Max Planck Research School for Global Biogeochemical Cycles, Friedrich Schiller University Jena


ELLIS UNIT JENA


FRIEDRICH-SCHILLER-
UNIVERSITÄT
JENA


ELLIS UNIT

Research node:
Artificial Intelligence and Information Analysis (AIIA) lab

Directors:
Prof. Ioannis Pitas

Year of establishment:
1998

Number of researchers:
21-50

Parent organizations:
Aristotle University of Thessaloniki
Department of Informatics

Contact information:

Topics of expertise

Computer vision, machine learning

Selected publications, peer-reviewed

- I. Pitas, “Graph analysis in social media”, CRC Press, 2016
- A.Iosifidis, A.Tefas, I.Pitas, "On the kernel extreme learning machine classifier", Pattern Recognition Letters, pp. 11-17, 2015
- I. Mademlis, V. Mygdalis, N.Nikolaidis, M. Montagnuolo, F. Negro, A. Messina, I.Pitas, "High-level multiple-UAV cinematography tools for covering outdoor events", IEEE Transactions on Broadcasting, vol. 65, no. 3, pp. 627-35, 2019
- R. Fan, U. Ozgunalp, B. Hosking, M.Liu, I.Pitas, "Pothole detection based on disparity transformation and road surface modeling", IEEE Transactions on Image Processing, 2019
- S.Nikitidis, A.Tefas, I.Pitas, "Maximum margin projection subspace learning for visual data analysis", IEEE Transactions on Image Processing, pp. 4413-4425, 2014
- 1000+ papers, 50+ book chapters, 11+ books, see https://aiia.csd.auth.gr/

Selected projects, funded by the European Commission or national agencies

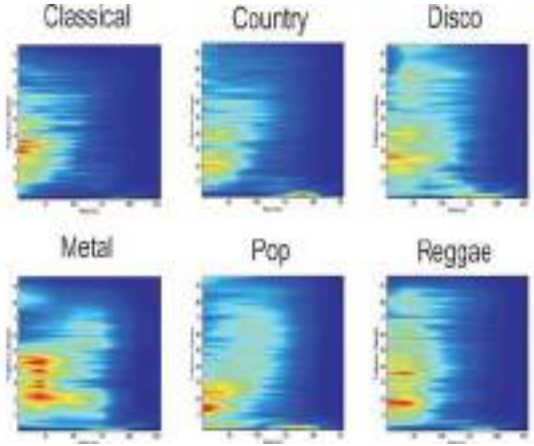
- AerialCore “AERIAL COgnitive integrated multi-task Robotic system with Extended operation range and safety”, European Commission (H2020)
- AI4Media “A European Excellence Centre for Media, Society and Democracy”, European Commission (grant no. 951911), 2020-2024
- Other Horizon Europe projects: AI4Europe, SIMAR
- 80+ R&D projects, see https://aiia.csd.auth.gr/

Related study programmes, doctoral or master levels

- PhD studies on AI
- Msc program on AI, MSc program on Digital Media and Computational Intelligence


'Danube Ride Towards Future Technologies'
region 8
IEEE
IEEE
TSP
TSP


AIDA
International Artificial Intelligence Doctoral Academy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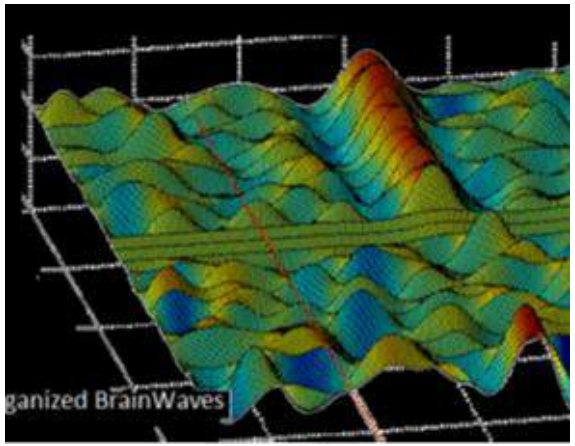

ganized BrainWaves

Research node:
Artificial Intelligence Laboratory

Directors:
Prof. George A. Vouros

Year of establishment:
2015

Number of researchers:
11-20

Parent organizations:
University of Piraeus

Contact information:

Topics of expertise

Automated reasoning and inference, knowledge representation, machine learning, multi-agent systems

Selected publications, peer-reviewed

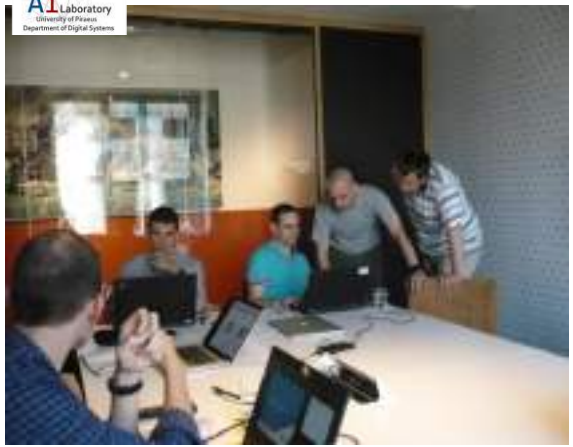
- G. A. Vouros, "Explainable Deep Reinforcement Learning: State of the Art and Challenges". ACM Comput. Surv. Just Accepted, 2022
- P. Nikitopoulos, A. Vlachou, C. Doulkeridis, et al., "Parallel and scalable processing of spatio-temporal RDF queries using Spark", Geoinformatica, vol. 25, pp. 623–653, 2021
- K. Kotis, G. Vouros, D. Spiliotopoulos, "Ontology engineering methodologies for the evolution of living and reused ontologies: Status, trends, findings and recommendations", The Knowledge Engineering Review, vol. 35, no. E4, 2020
- C. Spatharis, A. Bastas, T. Kravaris, K. Blekas, G. A. Vouros, J. M.Cordero, "Hierarchical multiagent reinforcement learning schemes for air traffic management", Neural Computing and Applications, vol. 10, 2021
- G. A. Vouros, G. M. Santipantakis, C. Doulkeridis, et al., "The datAcron Ontology for the Specification of Semantic Trajectories", Journal on Data Semanttics, vol. 8, pp. 235–262, 2019
- G. A. Vouros, G. Andrienko, C. Doulkeridis, N. Pelekis, et al., "Big Data Analytics for Time Critical Mobility Forecasting", Springer, 2020

Selected projects, funded by the European Commission or national agencies

- SIMBAD "Combining Simulation Models and Big Data Analytics for ATM Performance Analysis", European Commission, (H2020 SESAR Joint Undertaking, grant no. 894241), 2020-2022
- TAPAS "Towards and Automated and exPlainable ATM System", European Commission (H2020, SESAR Joint Undertaking, grant no. 89235), 2020-2022
- DART "DART-Data-Driven Aircraft Trajectory Prediction Research ", European Commission (H2020, SESAR Joint Undertaking, grant no. 699299), 2016-2018
- datAcron "Big Data Analytics for Time Critical Mobility Forecasting", European Commission (H2020, grant no. 687591), 2016-2018

Related study programmes, doctoral or master levels

- MSc on "Artificial Intelligence", University of Piraeus
- PhD on "Artificial Intelligence", University of Piraeus


Ai Laboratory
University of Piraeus
Department of Digital Systems

TNMΣ/AISE

Research node:

Artificial Intelligence and Systems Engineering Lab

Directors:

Prof. Emmanouil Marakakis

Year of establishment:

2015

Number of researchers:

11-20

Parent organizations:

Hellenic Mediterranean University (HMU)

Contact information:

Topics of expertise

Automated reasoning and inference, knowledge representation, natural language processing, machine learning, intelligent agents, reasoning under uncertainty.

Selected publications, peer-reviewed

- S. Zervoudakis, E. Marakakis, H. Kondylakis, S. Goumas, "OpinionMine: A Bayesian-based framework for opinion mining using Twitter Data", Machine Learning with Applications, vol. 3, pp. 100018, 2021
- G. Alexakis, S. Panagiotakis, A. Fragkakis, E. Markakis, K. Vassilakis, "Control of smart home operations using natural language processing, voice recognition and IoT technologies in a multi-tier architecture", Designs, vol. 3, no. 3, pp. 32, 2019
- M. D. Grammatikakis, et al., "Security in MPSoCs: A NoC firewall and an evaluation framework", IEEE Trans. CAD, vol. 99, pp. pp. 1344-1357, 2015
- K. Vassilakis, et al., "Learning by playing: An LBG for the fortification gates of the Venetian walls of the city of Heraklion", EAI Endorsed Trans. Creative Technologies, vol. 5, no. 16, pp. 156773, 2018
- E.. Tzagkarakis, H. Kondylakis, G. Vardakis, N. Papadakis, "Ontology Based Governance for Employee Services", Algorithms 14, vol. 104, 2021
- M. Giannoulis, H. Kondylakis, E. Marakakis, "Designing and implementing a collaborative health knowledge system", Expert Systems with Applications, vol. 126, pp. 277-294, 2019

Selected projects, funded by the European Commission or national agencies

- DREAMS "Distributed REal-time Architecture for Mixed Criticality Systems", European Commission (FP7), 2013-2017
- ASAP "Building effective drug prevention results across Europe, based on prevention systems analysis and widespread professional training", European Commission (JUSTICE Programme), 2019-2020
- Young & Smart "A comprehensive educational program in the field of entrepreneurship and social activity of young people", European Commission (Erasmus+, grant no. 2018-2-PL01-KA205-051604), 2018-2020
- ENhANCE "EuropeaN curriculum for fAmily aNd Community nurse", European Commission (Erasmus+, KA2: Cooperation for innovation and the exchange of good practices), 2018-2020

Related study programmes, doctoral or master levels

- Doctoral program, Hellenic Mediterranean University (HMU)
- Master in Informatics Engineering, Hellenic Mediterranean University (HMU)


Artificial Intelligence
Knowledge Representation
Reasoning
Machine Learning – Data Mining
Natural Language Processing
Intelligent Agents
Logic Programming
Meta-programming


Educational Technology
Digital Learning Platforms
Instructional Design & eLearning
Educational Standards
Assessment / Learning Analytics
Open and Distance Learning
Lifelong learning
Collaborative & Social Learning
Usability Engineering / Evaluation


Embedded Real-Time Systems (E-Health, IIoT, Transportation)
Develop Cyber-Physical Systems
Mixed Criticality (Linux & RTOS)
Embedded security, safety, reliability


Medical Informatics
Decision Support Systems
Knowledge-Based Systems
Electronic Health Record
Telehealth Services


Serious Games
Developing games
Game-based learning
Inclusive design
Serious Games
Assistive technologies
Playful interactions
Multimodal Sensing
Natural User Interfaces
Educational virtual environments / ecosystems


Web Technology
Ontologies
Knowledge Engineering
Description logic
Resource description framework
Web ontology Language
Rules

Research node:
Institute of Artificial Intelligence, University Research Center of Patras

Directors:
Prof. Michael N. Vrahatis
Prof. Spyridon Likothanassis
Prof. Basilis Boutsinas

Year of establishment:
2020

Number of researchers:
1-10

Parent organizations:
University of Patras, Greece

Contact information:

Topics of expertise
Machine learning

Selected publications, peer-reviewed
- See https://scholar.google.ca/citations?user=3mQhqcsAAAAJ&hl=en
- See https://scholar.google.ca/citations?hl=en&user=x0Xemm8AAAAJ
- See https://scholar.google.ca/citations?hl=en&user=hA0bOwMAAAAJ
-
-
-

Selected projects, funded by the European Commission or national agencies
- See https://thalis.math.upatras.gr/~vrahatis/
- See https://www.ceid.upatras.gr/en/staff/faculty/likothanassis-spiridon
- See https://misbilab.edu.gr/team-view/vutsinas/
-

Related study programmes, doctoral or master levels
- https://ddcdm.ceid.upatras.gr/en/641-2/
- https://www.math.upatras.gr/en/studies/msc/mcda

HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

Research node:
Artificial Intelligence Team

Directors:
Prof. Manolis Koubarakis

Year of establishment:
2005

Number of researchers:
11-20

Parent organizations:
National and Kapodistrian University of Athens

Contact information:

Topics of expertise

Human interfaces, knowledge representation, machine learning, natural language processing

Selected publications, peer-reviewed

- K. Bereta, et al., "The Copernicus app lab project: Easy access to Copernicus data", Proceedings of the International Conference on Extending Database Technology, pp. 501-511, 2019
- C. Nikolaou, K. Dogani, K. Bereta, G. Garbis, M. Karpathiotakis, K. Kyzirakos, M. Koubarakis, "Sextant: Visualizing time-evolving linked geospatial data", in Journal of Web Semantics, vol. 35, no. 1, pp. 35-52, 2015
- K. Bereta, M. Koubarakis, "Ontop of geospatial databases", International Semantic Web Conference, vol. 58, pp. 295-311, 2016
- K. Kyzirakos, M. Karpathiotakis, M. Koubarakis, "Strabon: A semantic geospatial DBMS", International Semantic Web Conference, vol. 7649, pp. 295-311, 2012
- K. Kyzirakos, I. Vlachopoulos, D. Savva, S. Manegold, M. Koubarakis, "GeoTriples: a Tool for Publishing Geospatial Data as RDF Graphs Using R2RML Mappings", International Semantic Web Conference, vol. 1272, pp. 393-396, 2014
- D. Punjani, et al., "Template-Based Question Answering over Linked Geospatial Data", Workshop on Geographic Information Retrieval, no. 7, pp. 1-10, 2018

Selected projects, funded by the European Commission or national agencies

- DeepCube "Explainable AI Pipelines for Big Copernicus Data", European Commission (grant no. 951911), 2021-2023
- AI4Copernicus "Reinforcing the AI4EU Platform by Advancing Earth Observation Intelligence, Innovation and Adoption", European Commission (grant no. 101016798), 2021-2023
- TAILOR "Trustworthy AI-Integrating Learning, Optimisation and Reasoning", European Commission (grant no. 952215), 2020-2023
- ExtremeEarth "Big data technologies and extreme scale analytics", European Commission (grant no. 825258), 2019-2021

Related study programmes, doctoral or master levels

- Ph. D. in Informatics and Telecommunications, National and Kapodistrian Universtity of Athens
- M. Sc. In Data Science and Information Technologies, National and Kapodistrian Universtity of Athens


EXTREME


SPACE

Research node:

Artificial Intelligence Group (AI Group)

Directors:

Prof. Ioannis Hatzilygeroudis

Year of establishment:

2010

Number of researchers:

1-10

Parent organizations:

University of Patras

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, intelligent robotics, knowledge representation, machine learning, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- J. Prentzas, I. Hatzilygeroudis, "Assessment of Life Insurance Applications: An Approach Integrating Neuro-Symbolic Rule-Based with Case-Based Reasoning", Expert Systems, vol. 33, no. 2, pp. 145–160, 2016
- I. Perikos, et al., "Automatic Estimation of Exercises Difficulty Levels in a Tutoring System for Teaching the Conversion of Natural Language into First Order Logic", Expert Systems, vol. 33, no. 6, pp. 569-580, 2016
- I. Perikos, et al., "Assistance and Feedback Mechanism in an Intelligent Tutoring System for Teaching Conversion of Natural Language into Logic", International Journal of Artificial Intelligence in Education, 2017
- P. Giannopoulos, I. Perikos, I. Hatzilygeroudis, "Deep learning approaches for facial emotion recognition: A case study on FER-2013", Advances in hybridization of intelligent methods, Springe, pp. 1-16, 2018
- S. Kardakis, I. Perikos, F. Grivokostopoulou, I. Hatzilygeroudis, "Examining Attention Mechanisms in Deep Learning Models for Sentiment Analysis", Applied Sciences, vol. 11, no. 9, pp. 3883, 2021
- D. Meimetis, I. Daramouskas, I. Perikos, I. Hatzilygeroudis, "Real-time multiple object tracking using deep learning methods", Neural Computing and Applications, S.I.: information, intelligence, systems and applications, pp. 1-30, 2021

Selected projects, funded by the European Commission or national agencies

- TESLA "Virtual Reality as an Innovative and Immersive Learning Tools for HEIs in Palestine", European Commission (grant no. 585772-EPP-1-2017-1-PS-EPPKA2-CBHE-JP), 2017-2021
- Biz4Fun "Let's have fun with the business start-up", European Commission (grant no. 2018-1-SK01-KA202-046271), 2018-2021
- AGRIENT "Enhancing Youth Entrepreneurship Skills, Careers Guidance and Competences in Agriculture Thought a Game based Virtual Reality Platform", European Commission (grant no. 2018-1-SK01-KA202-046271), 2019-2022
- NET "New Approach in Educational Technology", European Commission (grant no. 2019-1-SK01-KA201-060658), 2020-2022

Related study programmes, doctoral or master levels

- MSc on Data Driven Computing and Decision Making (in Greek), University of Patras


Ioannis Hatzilygeroudis
Professor


Dr. Isidoros Perikos


Dr. Konstantinos Chatzilygeroudis


Panagiota Athanasiou
PhD Candidate

ELTE | IK
DEPARTMENT OF ARTIFICIAL INTELLIGENCE

Research node:
Department of Artificial Intelligence

Directors:
Dr. János Botzheim

Year of establishment:
2021

Number of researchers:
11-20

Parent organizations:
Eötvös Loránd Univeristy

Contact information:

Topics of expertise

Cognition and AI, computer vision, ethical AI, heuristic search, human interfaces, intelligent robotics, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- F. Ádám, et al., "Multimodal sentiment and personality perception under speech: A comparison of transformer-based architectures", Machine Learning Research, vol. 173, pp. 218-241, 2022
- G. Baranyi, "AI technologies for machine supervision and help in a rehabilitation scenario multimodal technologies and interaction", vol. 6:7, no. 48, 2022
- A. A. Saputra, "Combining reflexes and external sensory information in a neuromusculoskeletal model to control a quadruped robot", IEEE Transactions on Cybernetics, vol. 14, 2021
- C. C. Phiri, C. Valle, J. Botzheim, Z. Ju, H. Liu, "Fuzzy rule-based model for outlier detection in a topical negative pressure wound therapy device", ISA Transactions, vol. 117 pp. 16-27, 2021
- M. Véges, V. Varga, A. Lőrincz, "3D human pose estimation with siamese equivariant embedding", Neurocomputing, vol. 339, pp. 194-201, 2019

Selected projects, funded by the European Commission or national agencies

- HumanE-AI-Net "European network of Human-centered Artificial Intelligence"
- AI-Lab "Artificial Intelligence National Laboratory"
- MOBOT "Development of AI supported automatic warehouse storage system based on machine vision", (grant no. 2020-1.1.2-PIACI-KFI-2020-00115), 2021-2023
- "Autonomous systems for human-AI interaction", (grant no. EFOP-3.6.3-VEKOP-16-2017-00001), 2018-2021

Related study programmes, doctoral or master levels

- Artificial Intelligence specialization in the Computer Science Master Programme






UNIVERSITY OF SZEGED

Research node:
SzegedAI

Directors:
Prof. Márk Jelasity
Dr. Richárd Farkas

Year of establishment:
2003

Number of researchers:
1-10

Parent organizations:
University of Szeged

Contact information:

Topics of expertise

text, audio, graph, health, services, media

Selected publications, peer-reviewed

- D. Zombori, B. Bánhelyi, T. Csendes, I. Megyeri, M. Jelasity, “Fooling a complete neural network verifier”, International Conference on Learning Representations (ICLR), 2021
- G. Berend, “Sparse coding of neural word embeddings for multilingual sequence labeling”, Transactions of the Association for Computational Linguistics, vol. 5, pp. 247–261, 2017
- L. Tóth, I. Hoffmann, G. Gosztolya, V. Vincze, G. Szatlóczki, Z. Bánréti, M. Pákáski, J. Kálmán, “A speech recognition-based solution for the automatic detection of mild cognitive impairment from spontaneous speech”, vol. 15, no. 2, 2018
- R. Farkas, “Irrelevancy filtering”, World, Patent no. WO2020212700, 2020
- L. Tóth, I. Hoffmann, G. Gosztolya, V. Vincze, M. Pákáski, J. Kálmán, "Neurokognitív zavar automatizált felismerése hangminta alapján, Hungary, Patent no. P1900166, 2019

Selected projects, funded by the European Commission or national agencies

- ProsperAMnet “Interreg“ European Commission (ERDF), 2019-2022
- Qlectives “Quality Collectives: Socially Intelligent Systems for Quality”, European Commission (FP7), 2009-2013

Related study programmes, doctoral or master levels

- Doctoral Programme in Computer Science, University of Szeged

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA for Zaky

Research node:

ALMA-AI Alma Mater Research Center for Human-Centered Artificial Intelligence

Directors:

Prof. Michela Milano

Year of establishment:

2020

Number of researchers:

101+

Parent organizations:

University of Bologna

Contact information:

Topics of expertise

Automated reasoning and inference, computer vision, ethical AI, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, reasoning under uncertainty

Selected publications, peer-reviewed

- M. Lombardi, M. Milano, A. Bartolini, "Empirical decision model learning". Artif. Intell., vol. 244, pp- 343-367, 2017
- A. De Filippo, M. Lombardi, M. Milano, "Integrated offline and online decision making under uncertainty", J. Artif. Intell. Res., vol. 70, pp. 77-117, 2021
- R. Liepina, G. Sartor, A. Wyner, "Arguing about causes in law: A semi-formal framework for causal arguments", Artif. Intell. Law, vol. 28, no. 1, pp. 69-89, 2020
- S. Chopra, G. Notarstefano, M. Rice, M. Egerstedt, "A distributed version of the Hungarian method for multirobot assignment", IEEE Trans. Robotics, vol. 33, no. 4, pp. 932-947, 2017
- F. Chesani, A. Galassi, M. Lippi, P. Mello, "Can deep networks learn to play by the rules? A case study on nine men's Morris", IEEE Trans. Games, vol. 10, no. 4, pp. 344-353, 2018
- A. G. Nuzzolese, V. Presutti, A. Gangemi, S. Peroni, P. Ciancarini, "Aemoo: Linked data exploration based on Knowledge patterns", Semantic Web, vol. 8, no. 1, pp. 87-112, 2017

Selected projects, funded by the European Commission or national agencies

- AII4EU and AI4EUROPE, European Commision (H2020 and Horizon Europe, respectively), 2019-2021 and 2022-2024, respectively
- StairwAI, European Commision (H2020), 2021-2023
- TAILOR, European Commision (H2020), 2020-2024
- Human-AI-Net, European Commision (H2020), 2020-2024

Related study programmes, doctoral or master levels

- International Degree in AI
- PhD in Data Science

AIMH
Artificial Intelligence for Media and Humanities

Research node:

Artificial Intelligence for Media and Humanities Lab (AIMH)

Directors:

Dr. Giuseppe Amato

Dr. F. Falchi, Dr. F. Sebastiani

Dr. C. Meghini, Dr. C. Gennaro

Year of establishment:

2020

Number of researchers:

21-50

Parent organizations:

National Res. Council, Inst. of Inf. Science and Technologies "Alessandro Faedo" (CNR-ISTI)

Contact information:

Topics of expertise

Selected publications, peer-reviewed

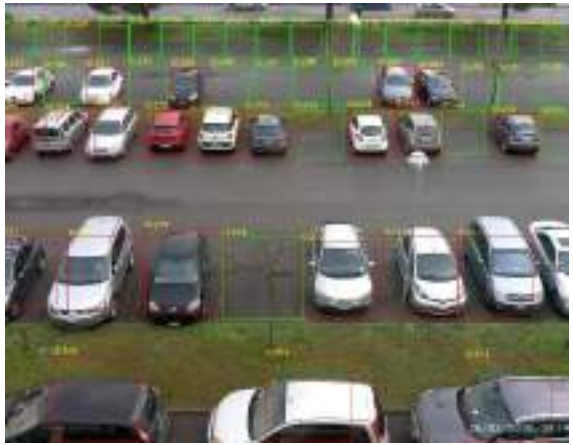
- N. Messina, et al., "Fine-grained visual textual alignment for cross-modal retrieval using transformer encoders", ACM Transactions on Multimedia Computing, Communications, and Applications, vol. 17, no. 4, 2021
- G. Lagani, F. Fabrizio, C. Gennaro, G. Amato, "Hebbian Semi-Supervised Learning in a Sample Efficiency Setting", Neural Networks, vol. 143, pp. 719-731, 2021
- G. Amato, F. Carrara, F. Falchi, C. Gennaro, C. Meghini, C. Vairo, "Deep learning for decentralized parking lot occupancy detection", Expert Systems with Applications, vol. 72, pp. 327-334, 2017
- A. Esuli, A. Moreo, F. Sebastiani. "Funnelling: A new ensemble method for heterogeneous transfer learning and its application to cross-lingual text classification", ACM Transactions on Information Systems, vol. 37, no. 3, pp. 1-30, 2019
- A. Moreo, A. Esuli, F. Sebastiani, "Learning to weight for text classification", IEEE Transactions on Knowledge and Data Engineering, vol. 32, no. 2, 2020
- C. Meghini, C. Bartalesi, D. Metilli, "Representing narratives in digital libraries: The narrative ontology", Semantic Web, vol. 12, no. 2, pp. 241-264, 2021

Selected projects, funded by the European Commission or national agencies

- AI4Media "A European Excellence Centre for Media, Society and Democracy", European Commission (grant no. 951911), 2020-2024
- AI4EU "Europe's AI-on-Demand Platform", European Commission (grant no. 825619), 2019-2021
- SoBigData++ "European Integrated Infrastructure for Social Mining and Big Data Analytics", European commission, (grant no. 871042), 2020-2022
- MINGEI "Representation and Preservation of Heritage Crafts", European Commission (grant no. 822336), 2018-2022

Related study programmes, doctoral or master levels

- MSc in Artificial Intelligence in Data Engineering, University of Pisa
- National PhD in Artificial Intelligence, various Italian universities

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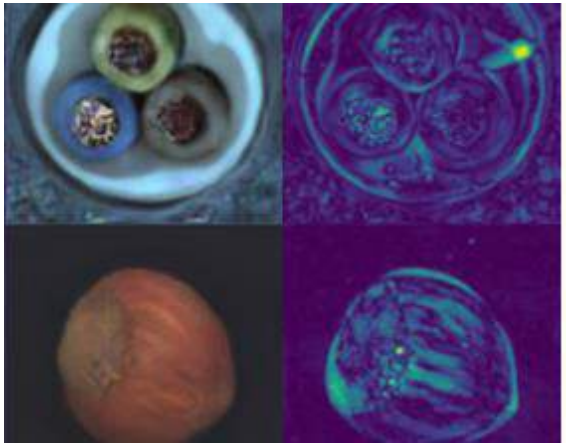


UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

Research node:
Artificial Intelligence Research and Innovation Center (AIRI)

Directors:
Professor Rita Cucchiara

Year of establishment:
2011

Number of researchers:
51-100

Parent organizations:
University of Modena and Reggio Emilia

Contact information:

Topics of expertise

Cognition and AI, computer vision, ethical AI, human interfaces, intelligent robotics, knowledge representation, machine learning, natural language processing, multi-agent systems

Selected publications, peer-reviewed

- G. Borghi, M. Fabbri, R. Vezzani, S. Calderara, R. Cucchiara, "Face-from-depth for head pose estimation on depth images", IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 42, no. 3, pp. 596-609, 2020
- M. Stefanini, M. Cornia, L. Baraldi, S. Cascianelli, G. Fiameni, R. Cucchiara, "From show to tell: A survey on deep learning-based image captioning", IEEE Transactions on Pattern Analysis and Machine Intelligence, 2022
- A. Palazzi, L. Bergamini, S. Calderara, R. Cucchiara, "Warp and learn: Novel views generation for vehicles and other objects", IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 44, no. 4, pp. 2216-2227, 2022
- F. Landi, L. Baraldi, M. Cornia, M. Corsini, R. Cucchiara, "Multimodal attention networks for low-level vision-and-language navigation", Computer Vision and Image Understanding, vol. 210, 2021
- A. Cecaj, M. Lippi, M. Mamei, F. Zambonelli, "Comparing deep learning and statistical methods in forecasting crowd distribution from aggregated mobile phone data", Applied Sciences, vol. 10, no. 18, p. 6580, 2020
- S. Mariani, G. Cabri, F. Zambonelli, "Coordination of autonomous vehicles: Taxonomy and survey", ACM Comput. Surv., vol. 54, no. 1, 2022

Selected projects, funded by the European Commission or national agencies

- HUMAN-AI NET "European Network of Human-centered Artificial Intelligence" European Commission (H2020), 2020-2023
- PERSEO "European Training Network on PErsonalized Robotics as SErvice Oriented applications" European Commission (Marie Curie Action), 2021-2024
- PREVUE "Prediction of activities and Events by Vision in an Urban Environment" National Research Ministry (MUR PRIN, Project of Relevant National Interest) 2019-2022
- INSECTT "Intelligent Secure Trustable Things" European Commission (ECSEL Joint Undertaking), 2020-2023

Related study programmes, doctoral or master levels

- School in AI: Deep Learning, Vision and Language for Industry, AI Academy UNIMORE, funded by Emilia Romagna
- International Doctorate in Information and Communication Technologies and Master Degree in AI, UNIMORE

Research node:

Pervasive Artificial Intelligence Laboratory

Directors:

Prof. Davide Bacciu

Dr. Patrizio Dazzi

Year of establishment:

2020

Number of researchers:

21-50

Parent organizations:

University of Pisa

Italian National Research Council

Contact information:

Topics of expertise

Computer vision, cognition and AI, human interfaces, machine learning, natural language processing

Selected publications, peer-reviewed

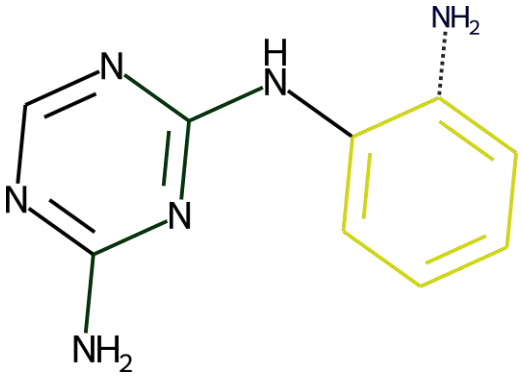
- V. Lomonaco, et al, "Avalanche: An end-to-end library for continual learning", CVPRW, pp. 3600-3610, 2021
- H. Kavalionak, E. Carlini, P. Dazzi, L. Ferrucci, M. Mordacchini, M. Coppola, "Impact of network topology on the convergence of decentralized federated learning systems", IEEE Symposium on Computers and Communications, 2021
- A. Cossu, A. Carta, V. Lomonaco, D. Bacciu, "Continual learning for recurrent neural networks: An empirical evaluation", Neural Network, vol. 143, pp. 607–627, 2021
- D. Bacciu, F. Errica, A Micheli, M. Podda "A Gentle Introduction to Deep Learning for Graphs", Neural Networks, vol. 129, pp. 203-221, 2020
- D. Bacciu, F. Errica, A Micheli, "Contextual Graph Markov Model: A Deep and Generative Approach to Graph Processing", ICML (PMLR), vol. 80, pp. 294-303, 2018
- C. Gallicchio, A. Micheli, "Deep reservoir computing: A critical experimental analysis", Neurocomputing, vol. 268, pp. 87-99, 2017

Selected projects, funded by the European Commission or national agencies

- EMERGE "Emergent awareness from minimal collectives", European Innovation Council (grant no. 101070918), 2022-2026
- TEACHING "A computing Toolkit for building Efficient Autonomous appliCations leveraging Humanistic INtelliGence", European Commission (grant no. 871385), 2020-2023
- TAILOR "Foundations of Trustworthy AI-Integrating Reasoning, Learning and Optimization", European Commission (grant no. 952215), 2020-2023
- PLANET4 "Practical Learning of Artificial Intelligence on the Edge for Industry 4.0", European Commission (grant no. 621639), 2020-2023

Related study programmes, doctoral or master levels

- Ph.D in Artificial Intelligence, University of Pisa
- M.Sc. in Computer Science, Artificial Intelligence Major, University of Pisa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Research node:

European Centre of Excellence on the Regulation of Robotics & AI

Directors:

Andrea Bertolini

Year of establishment:

2018

Number of researchers:

11-20

Parent organizations:

Sant'Anna, School of Advanced Studies

Contact information:

Topics of expertise

Ethical AI

Selected publications, peer-reviewed

- A. Bertolini, "Artificial Intelligence and civil law: liability rules for drones", Study commissioned by the European Parliament's Policy Dept. for citizens' rights and constitutional affairs at the request of the JURI Committee, PE 608, 2018
- A. Bertolini, F. Episcopo, N. A. Cherciu, "EPRS_STU(2021)656318_EN", European Parliament, 2021
- A. Bertolini, M. Riccaboni, "Grounding the case for a European approach to the regulation of automated driving: the technology-selection effect of liability rules", European Journal of Law and Economics 51.2, pp. 243-284, 2021
- A. Bertolini, F. Episcopo, "Frontiers | Robots and AI as Legal Subjects? Disentangling the Ontological and Functional Perspective | Robotics and AI", Frontiers in Robotics and AI, 2022
- A. Bertolini, R. Carli, "Human-Robot Interaction and User Manipulation", International Conference on Persuasive Technology, LNCS, vol. 13213, Springer, pp. 43-57, 2022
- Bertolini, A., F. Episcopo, and N. A. Cherciu, "Liability of online platforms", European Parliament, 2021

Selected projects, funded by the European Commission or national agencies

- INBOTS, "Inclusive Robotics for a better Society", European Commission (Horizon 2020, grant no. 780073), 2018-2021
- PERSEO, "ETN on PErsonalized Robotics as SErvice Oriented applications", European Commission (Marie Skłodowska-Curie Actions, Horizon 2020, grant no. 955778), 2021-2024
- CONBOTS, "CONnected through roBOTS", European Commission (Horizon 2020, grant no. 871803), 2020-2023
- REGULAITE, Erasmus Plus (grant no. 2021-1-IT01-KA220-VET-000028047)

Related study programmes, doctoral or master levels

- The Regulation of Robotics & AI in Europe: Legal, ethical and economic implications (summer school), EURA, 2022
- The PERSEO Project has started, EURA






UNIVERSITÀ DEL PIEMONTE ORIENTALE

Research node:

LIS: Laboratory for Intelligent Systems

Directors:

Prof. Luigi Portinale
Prof. Paolo Terenziani
Prof. Stefania Montani

Year of establishment:

1998

Number of researchers:

11-20

Parent organizations:

University of Piemonte Orientale

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, computer vision, knowledge representation, machine learning, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- V. Brusoni, L. Console, P. Terenziani, D. Theseider Dupré, "A spectrum of definitions for temporal model-based diagnosis", Artificial Intelligence, vol. 102, no. 1, pp. 39-79, 1998
- L. Portinale, P. Torasso, D. Magro, "Multi-modal diagnosis combining case-based and model-based reasoning: A formal and experimental analysis", Artificial Intelligence, vol. 158, pp. 109–153, 2004
- L. Portinale, D. Codetta Raiteri, S. Montani. "Supporting reliability engineers in exploiting the power of dynamic Bayesian networks", International Journal of Approximate Reasoning, vol. 51, no. 2, pp. 179-195, 2010
- S. Montani, G. Leonardi, A. Bottrighi, L. Portinale, P. Terenziani, "Supporting flexible, efficient and user-interpretable retrieval of similar time series", IEEE Transactions on Knowledge and Data Engineering, vol. 25, no. 3, pp. 677-689, 2013
- P. Terenziani, A. Andolina, L. Piovesan, "Managing temporal constraints with preferences: Representation, reasoning, and querying", IEEE Transactions on Knowledge and Data Engineering, vol. 29, no. 9, pp. 2067-2071, 2017
- L. Giordano, V. Gliozzi, "A reconstruction of the multipreference closure", Artificial Intelligence, vol. 290, 2021

Selected projects, funded by the European Commission or national agencies

- PowerGridSec " AI methodologies and tools for the analysis of cyber-attacks in ICT infrastructures for power grids", RSE, 2020-2022
- INTELLITrace "Improving comprehensive AI, validation and harmonization methods, as "functional bridge" between untargeted analytical approaches and tracking/authentication of food", European Commission (FP7), 2017-2018
- GINSENG "Integration of different forms of reasoning (non-monotonic, uncertain and case-based) for medical decision making", CSP, 2013-2015
- VERIFIM "Verification of Failure Impact by Model Checking", European Space Agency (grant no. TEC-SWE/09-259/YY), 2010-2011

Related study programmes, doctoral or master levels

- Master Course on Artificial Intelligence and Digital Innovation
- National PhD Course on Artificial Intelligence for Health and Life Sciences


STUDI del PIEMONTE ORIENTALE
A. AVOGADRO


DATA
Ai
IoT

UNIVERSITÀ DI TRENTO

Research node:
Multimodal and Human Understanding Group (MHUG)

Directors:
Prof. Nicu Sebe
Prof. Elisa Ricci

Year of establishment:
2009

Number of researchers:
21-50

Parent organizations:
University of Trento

Contact information:

Topics of expertise

Computer vision,, human interfaces, machine learning, intelligent robotics, natural language processing, reasoning under uncertainty, knowledge representation

Selected publications, peer-reviewed

- H. Tang, G. Sun, N. Sebe, and L. Van Gool, Edge Guided GANs with Multi-Scale Contrastive Learning for Semantic Image Synthesis, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 45, no. 12, pp. 14435-14452, December 2023.
- C. Saltori, F. Galasso, G. Fiameni, N. Sebe, F. Poiesi, and E. Ricci, Compositional Semantic Mix for Domain Adaptation in Point Cloud Segmentation, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 45, no. 12, pp. 14234-14247, December 2023.
- N. Pu, Z. Zhong, N. Sebe, and M. S. Lew, A Memorizing and Generalizing Framework for Lifelong Person Re-Identification, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 45, no. 11, pp. 13567-13585, November 2023.
- Y. Song, N. Sebe, and W. Wang, Orthogonal SVD Covariance Conditioning and Latent Disentanglement, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 45, no. 7, pp. 8773-8786, July 2023.
- H. Tang, P. Torr, and N. Sebe, Multi-Channel Attention Selection GANs for Guided Image-to-Image Translation, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 45, no. 5, pp. 6055-6071, May2023.
- G. Yang, E. Fini, D. Xu, P. Rota, M. Ding, M. Nabi, X. Alameda-Pineda, E. Ricci, Uncertainty-Aware Contrastive Distillation for Incremental Semantic Segmentation, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 45, no. 2, pp. 2567-2581, February 2023

Selected projects, funded by the European Commission or national agencies

- ELIAS "European Lighthouse of AI for Sustainability", European Commission (grant no. 101120237), 2023 - 2027
- AI4Trust "AI-based-technologies for trustworthy solutions against disinformation", European Commission (grant no. 101070190), 2023 - 20246
- AI4Media "A European Excellence Centre for Media, Society and Democracy", European Commission (grant no. 871245), 2020-2024
- SPRING "Socially Pertinent Robots in Gerontological Healthcare", European Commission (grant no 871245), 2020-2024

Related study programmes, doctoral or master levels

- Ph.D. in Information Engineering and Computer Science, University of Trento
- M.Sc. in Artificial Intelligence Systems, University of Trento


CVPR

Research node:

Laboratory for Artificial Intelligence and Learning Algorithms

Directors:

Nicolò Cesa-Bianchi

Year of establishment:

2022

Number of researchers:

11-20

Parent organizations:

Università degli Studi di Milano

Contact information:

Topics of expertise

Online learning and sequential decision-making, multi-armed bandits and reinforcement learning, active learning, multi-agent learning, foundations of machine learning

Selected publications, peer-reviewed

- N. Cesa-Bianchi, T. Cesari, R. Colomboni, F. Fusco, and S. Leonardi. Repeated Bilateral Trade Against a Smoothed Adversary Proceedings of the 36th Annual Conference on Learning Theory (COLT). PMLR 195:1095-1130, 2023.
- D. van der Hoeven, L. Zierahn, T. Lancewicki, A. Rosenberg, and N. Cesa-Bianchi. A Unified Analysis of Nonstochastic Delayed Feedback for Combinatorial Semi-Bandits, Linear Bandits, and MDPs. Proc. of COLT. PMLR 195:1285-1321, 2023
- E. Esposito, S. Masoudian, H. Qiu, D. van der Hoeven, N. Cesa-Bianchi, and Y. Seldin. Delayed bandits: when do intermediate observations help?. Proc. of the 40th International Conference on Machine Learning (ICML). PMLR 202:9374-9395, 2023.

N. Cesa-Bianchi, T. Cesari, T. Osogami, M. Scarsini, and S. Wasserkrug. Learning the Stackelberg equilibrium in a newsvendor game. Proc. of the 2023 Int. Conference on Autonomous Agents and Multiagent Systems (AAMAS). Pages 242–250, 2023.

- L. Zierahn, D. van der Hoeven, N. Cesa-Bianchi, and G. Neu. Nonstochastic contextual combinatorial bandits. Proceedings of the 26th International Conference on Artificial Intelligence and Statistics (AISTATS). PMLR 206:8771-8813, 2023
- M. Bressan, N. Cesa-Bianchi, S. Lattanzi, A. Paudice, and M. Thiessen. Active learning of classifiers with label and seed queries. Advances in Neural Information Processing Systems 35 (NeurIPS), 2022

Selected projects, funded by the European Commission or national agencies

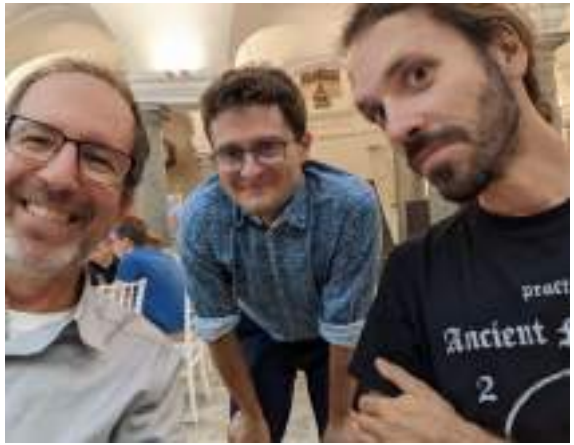
- ELIAS, European Lighthouse of AI for Sustainability, EU Horizon 101120237, 2023-2027
- ELSA, European Lighthouse on Secure and Safe AI, EU Horizon 101070617, 2022-2025

FAIR, Future Artificial Intelligence Research, NextGenerationEU, 2023-2026

ELISE, European Learning and Intelligent Systems Excellence, EU Horizon 951847, 2020-2024

Related study programmes, doctoral or master levels

- Master program in Artificial intelligence for science and technology
- Italian PhD program in Artificial Intelligence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GOTRON

Research node:

Visual and Multimodal Applied Learning (DAUIN). Image Processing and Learning (DET). AI4People Program (LINKS).

Directors:

Prof. Tatiana Tommasi

Year of establishment:

2020

Number of researchers:

21-50

Parent organizations:

Politecnico di Torino: DAUIN and DET departments.

LINKS Foundation

Contact information:

Topics of expertise

computer vision, intelligent robotics, knowledge representation, machine learning, natural language processing, and vreasoning under uncertainty, ethical AI.

Selected publications, peer-reviewed

G. Goletto, M. Planamente, B. Caputo, G. Averta. "Bringing Online Egocentric Action Recognition Into the Wild" IEEE Robotics and Automation Letters 2023

D. Caldarola, B. Caputo, M. Ciccone. "Improving Generalization in Federated Learning by Seeking Flat Minima", European Conference on Computer Vision 2022

A. Alliegro, F. Cappio Borlino, T. Tommasi. "3DOS: Towards 3D Open Set Learning-Benchmarking and Understanding Semantic Novelty Detection on Point Clouds", Advances in Neural Information Processing Systems 2022

S. Nandan Rai, F. Cermelli, D. Fontanel, C. Masone, B. Caputo. "Unmasking Anomalies in Road-Scene Segmentation", International Conference on Computer Vision 2023

A. Montanaro, D. Valsesia, E. Magli. "Rethinking the compositionality of point clouds through regularization in the hyperbolic space", Advances in Neural Information Processing Systems 2022

G. Tiboni, A. Protopapa, T. Tommasi, G. Averta. "Domain Randomization for Robust, Affordable and Effective Closed-loop Control of Soft Robots". IEEE/RSJ international conference on intelligent robots and systems 2023

Selected projects, funded by the European Commission or national agencies

FAIR: "Future Artificial Intelligence", European Commission NextGenerationEU (grant PE00000013, IT Mur DD prot. 1555), 2023-2026

ELSA: "European Lighthouse on Secure and Safe AI", European Commission (grant ID: 101070617), 2022-2025

ELISE: "European Network of AI Excellence Centres", European Commission (grant ID: 951847), 2021-2024

BURG: "Benchmarks for UndeRstanding Grasping" - CHIST-ERA programme for European coordinated research on long-term information and communication technologies (ICT) and ICT-based scientific challenges, 2019-2023

Related study programmes, doctoral or master levels

National PhD in Artificial Intelligence - Industry 4.0 - Politecnico di Torino

Master Degree in Computer Engineering - Artificial Intelligence and Data Analytics - Politecnico di Torino


VANDA


MUSICAI
links

Research node:

Machine Learning & Intelligent systems. The Technion – AI center

Directors:

Prof. Shie Mannor

Prof. Assaf Schuster

Year of establishment:

2018

Number of researchers:

101+

Parent organizations:

Technion – Israel Institute of Technology

Contact information:

Topics of expertise

Selected publications, peer-reviewed

- Y. Efroni, G. Dalal, B. Scherrer, and S. Mannor, “How to combine tree-search methods in reinforcement learning”, AAAI, 2019
- A. Tamar, D. Soudry, and E. Zisselman, "Regularization guarantees generalization in Bayesian reinforcement learning through algorithmic stability", AAAI, 2022
- Y. Elul, A. Rosenberg, A. Schuster, A. Bronstein, Y. Yaniv, “Meeting the unmet needs of clinicians from AI systems in cardiology: A systematic formulation, and a suggested framework”, PNAS, 2021
- D. Soudry, D. Di Castro, A. Gal, A. Kolodny, and S. Kvatinsky, "Analog multiplier using memristor a memristive device and methods for implementing Hebbian learning rules using memristor arrays", US Patent US9754203 B2, 2017
- A. Schuster, and I. Kolchinsky, “Efficient adaptive detection of complex event patterns”, Application no. 17/289,625

Selected projects, funded by the European Commission or national agencies

- NEU-ChiP, European Commission (Horizon 2020, grant no. 964877), 2021-2024
- VaVeL, European Commission (Horizon 2020, grant no. 688380) 2015-2018
- Information-optimal machine learning, European Commission (ERC, grant no. 336078), 2013-2018

Related study programmes, doctoral or master levels

Digital Pathology and Artificial Intelligence Lab

Research node:

Digital Pathology and Artificial Intelligence Lab

Directors:

Prof. Rimvydas Petrauskas

Prof. Arvydas Laurinavicius

Year of establishment:

2015

Number of researchers:

11-20

Parent organizations:

Vilnius University

Contact information:

Topics of expertise

Cognition and AI, automated reasoning and inference, computer vision, heuristic search, human interfaces, machine learning

Selected publications, peer-reviewed

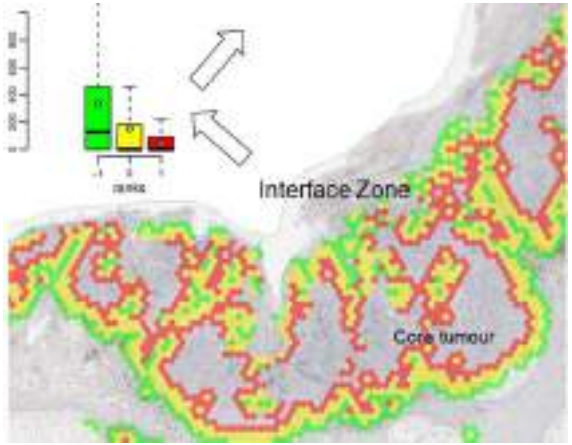
- Rasmusson, et al., "Immunogradient Indicators for antitumor response assessment by automated tumor-stroma interface zone detection", Am. J. Pathol., vol. S0002-9440, no. 20, pp. 30126-7, 2020
- Zilenaite, et al., "Independent prognostic value of intratumoral heterogeneity and immune response features by automated digital IHC analysis in early hormone receptor-positive breast carcinoma"., Front. Oncol., 2020
- Morkunas, et al., "Tumor collagen framework from bright-field histology images predicts overall survival of breast carcinoma patients", Scientific Reports, vol. 11, no. 1, pp. 1–14, 2021
- B. Plancoulaine, L. Poulain, N. Elie, A. Laurinavicius, "Computer-implemented process on an image of a biological sample", International Patent Application, PCT/EP2019/067180, 2020
- A. Laurinavicius, et al., "Automated tumour-stroma interface zone detection for anti-tumour response assessment by immunogradient indicators", International Patent Application PCT/IB2020/053396, 2020

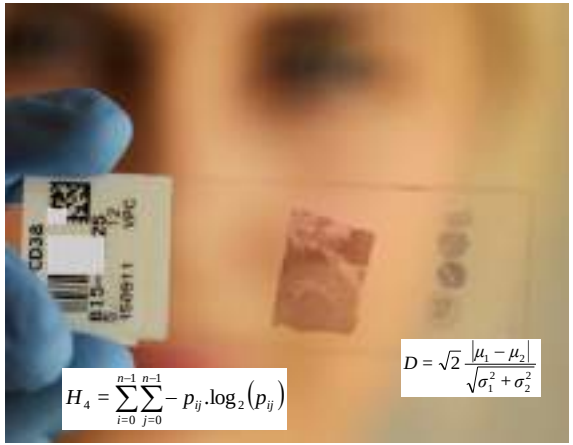
Selected projects, funded by the European Commission or national agencies

- "Artificial intelligence-driven prediction of BCG immunotherapy response in patients with non-muscle invasive papillary urothelial carcinoma", Lithuanian Research Council (grant no. P-MIP-21-249), 2021-2024
- "Deep-Context Tissue Analytics for Integrated Pathology Modelling in Tumors and Kidney Allografts", European Social Fund (grant no. 09.3.3-LMT-K-712-01-0139), 2018-2021
- "Comprehensive Biomarker Intra-Tumour Heterogeneity Evaluation By Digital Immunohistochemistry Image Analysis", European Social Fund (grant no. VP1-3.1-ŠMM-07-K-03-051), 2013-2015

Related study programmes, doctoral or master levels

- Informatics Engineering
- Informatics


Interface Zone
Core tumour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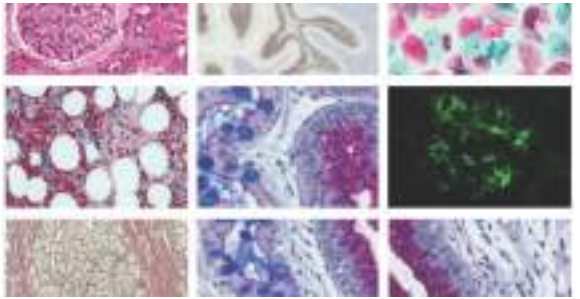
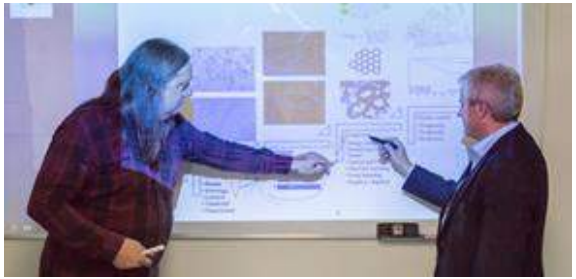
$D = \sqrt{2}\,\frac{|\mu_1 - \mu_2|}{\sqrt{\sigma_1^2 + \sigma_2^2}}$





L-Università ta' Malta

Research node:

Artificial Intelligence Research Group at the Institute of Digital Games

Directors:

Prof. Georgios N. Yannakakis
Dr. Antonios Liapis
Dr. Ahmed Khalifa

Year of establishment:

2013

Number of researchers:

21-50

Parent organizations:

University of Malta

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, heuristic search, human interfaces, machine learning

Selected publications, peer-reviewed

- K. Makantasis, A. Liapis, G. N. Yannakakis, "The pixels and sounds of emotion: General-purpose representations of arousal in games", IEEE Transactions on Affective Computing, early access
- J. Liu, S. Snodgrass, A. Khalifa, S. Risi, G. N. Yannakakis, J. Togelius, "Deep learning for procedural content generation", Neural Computing and Applications, vol. 33, no. 1, pp. 19-37, January 2021
- D. Gravina, A. Khalifa, A. Liapis, J. Togelius, G. N. Yannakakis, "Procedural content generation through quality diversity", IEEE Conference on Games (CoG), 2019, pp. 1-8
- G. N. Yannakakis, J. Togelius, "Artificial Intelligence and Games", Springer Nature, 2018
- G. N. Yannakakis, R. Cowie, C. Busso, "The ordinal nature of emotions: An emerging approach", IEEE Transactions on Affective Computing, vol. 12, no. 1, pp. 16-35, 2018
- G. N. Yannakakis, A. Liapis, C. Alexopoulos, "Mixed-initiative co-creativity", International Conference on the Foundations of Digital Games (FDG), pp. 1-8, 2014

Selected projects, funded by the European Commission or national agencies

- AI4Media "A European Excellence Centre for Media, Society and Democracy", European Commission (grant no. 951911), 2020-2024
- LAW-GAME "An Interactive, Collaborative Digital Gamification Approach to Effective Experiential Training and Prediction of Criminal Actions", European Commission (grant no. 101021714), 2020-2024
- PrismArch "Virtual reality aided design blending cross-disciplinary aspects of architecture in a multi-simulation environment", European Commission (grant no. 952002), 2020-2022
- Tamed "Tensor-bAsed Machine learning towards genEral moDels of affect", European Commission (grant no. 101003397), 2020-2022

Related study programmes, doctoral or master levels

- Ph.D. in Game Technology, Game Analysis, and Game Design, University of Malta
- M.Sc. in Digital Games, University of Malta






Process Intelligence RESEARCH

Research node:
Process Intelligence Research AI Lab

Directors:
Prof. Artur Schweidtmann

Year of establishment:
2021

Number of researchers:
11-20

Parent organizations:
Delft University of Technology

Contact information:

Topics of expertise

Computer vision, heuristic search, knowledge representation, machine learning, natural language processing, planning and action

Selected publications, peer-reviewed

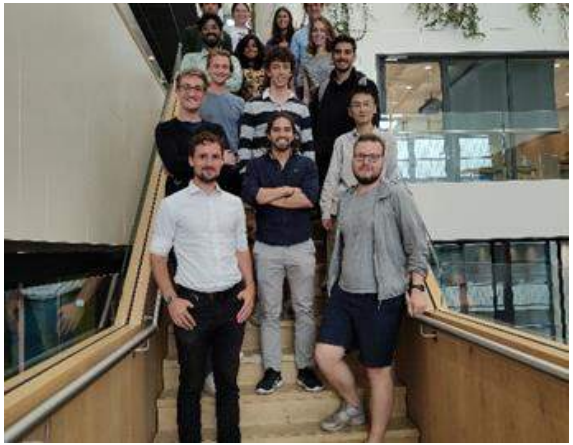
- A. M. Schweidtmann, et al., "Machine learning in chemical engineering: A perspective", Chemie Ingenieur Technik, vol. 93, no. 12, 2021
- A. M. Schweidtmann, et al., "Machine learning meets continuous flow chemistry: Automated optimization towards the Pareto front of multiple objectives", Chemical Engineering Journal, vol. 352, pp. 277-282, 2018
- A. M. Schweidtmann, A. Mitsos, "Deterministic global optimization with artificial neural networks embedded", Journal of Optimization Theory and Applications, vol. 180, no. 3, pp. 925-948
- A. M. Schweidtmann, et al., "Graph neural networks for prediction of fuel ignition quality", Energy & Fuels, vol. 34, no. 9, pp. 11395-11407, 2020
- A. M. Schweidtmann, et al., "Obey validity limits of data-driven models through topological data analysis and one-class classification", Optimization and Engineering, 2021
- J. W. Weber, et al., "Chemical data intelligence for sustainable chemistry", Chemical Society Reviews, vol. 50, pp. 12013-12036, 2021

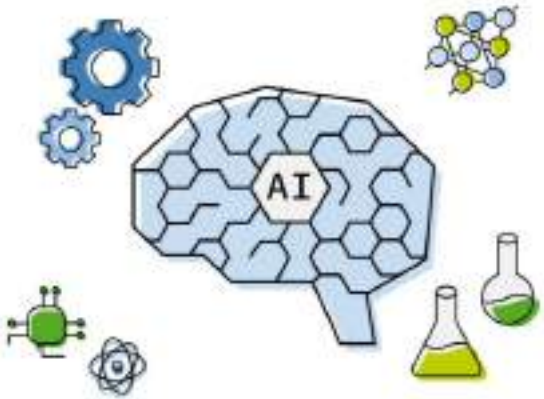
Selected projects, funded by the European Commission or national agencies

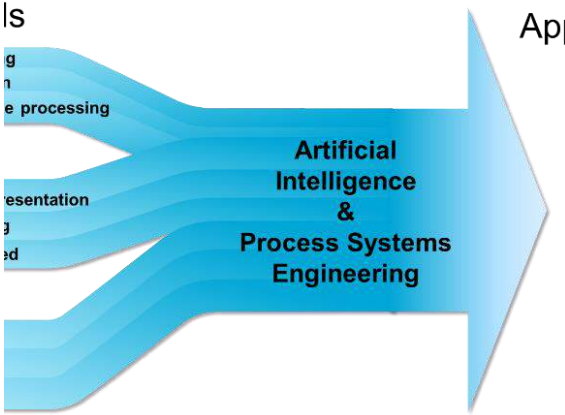
- ChemEngKG "The Chemical Engineering Knowledge Graph", Dutch Research Council (NWO), 2021-2022
- CHEME "Chemical Engineering & Medical Imaging AI Lab", Dutch Research Council (NWO), 2021-2026
- "4TU FAIR data Fund", 4TU.Reserachdata, 2022
- "Physics-Informed Neural Networks for Biochemcial Engineering", Bioengineering Institute, 2021

Related study programmes, doctoral or master levels

- MSc Chemical Engineering, Delft University of Technology
- BSc Molecular Science & Technology, Delft University of Technology




AI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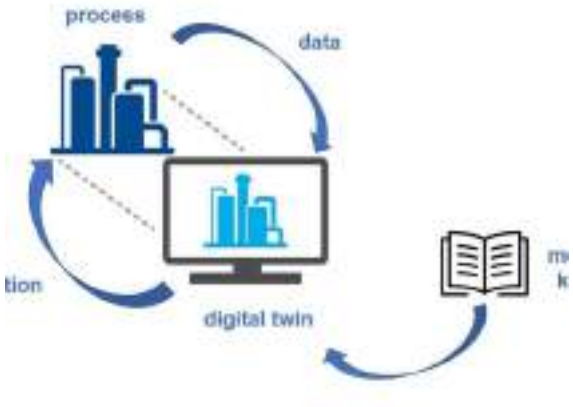
Artificial
Intelligence
&
Process Systems
Engineering


process
data
digital twin

Research node:

AI@Work Lab at the VU Amsterdam KIN Center for Digital Innovation

Directors:

Prof. Marleen Huysman

Year of establishment:

2000

Number of researchers:

21-50

Parent organizations:

Vrije Universiteit Amsterdam

Contact information:

Topics of expertise

Case-based reasoning, ethical AI, human interfaces, intelligent robotics, knowledge representation, machine learning

Selected publications, peer-reviewed

- L. Waardenburg, M. Huysman, A.V. Sergeeva, " In the land of the blind, the one-eyed is king: Knowledge brokerage in the age of learning algorithms", Organization Science, vol. 33, no.1, pp. 59-82, 2022
- D. Tyskbo, A.V. Sergeeva, "Brain exposed: How new imaging technology reconfigures expertise coordination in neurosurgery", Social Science & Medicine, vol. 292, 2022
- E. van den Broek, A. Sergeeva, M. Huysman, "When the machine meets the expert: An ethnography of developing AI for hiring", MIS Quarterly, vol.45, no. 3, pp. 1557-1580, 2021
- S.Pachidi, H. Berends, S.Faraj, M. Huysman, "Make way for the algorithms: Symbolic actions and change in a regime of knowing", Organization Science, vol. 32, no. 1, pp. 18-41, 2021
- L. Waardenburg, M. Huysman, M. Agterberg, "Managing AI Wisely: From Development to Organizational Change in Practice", Edward Elgar, 2021
- B. Kim, et al., "How does the radiology community discuss the benefits and limitations of artificial intelligence for their work? A systematic discourse analysis", European Journal of Radiology, vol. 136, pp.1-6, 2021

Selected projects, funded by the European Commission or national agencies

- "Multi-omics Interdisciplinary Research Integration to Address Dementia diagnosis", European Commission (Marie Curie Innovative Training Network, grant no. 860197), 2019
- EFRO Kansen voor West "Living Lab JIT Maintenance Techport", European Commission (grant no. SA.51991), 2018
- NWO Open Competition SGW 'Knowledge work in the age of AI", National Project (grant no. 40618eb030), 2019-2024
- "Crossover collaboration for digital innovation", The Netherlands Organisation for Scientific Research (NWO) & Co-financing (grant no. 31499120), 2015-2021

Related study programmes, doctoral or master levels

- Ph.D. in Business and Management, Vrije University Amsterdam
- M.Sc. in Digital Business and Innovation, Vrije University Amsterdam


MARLEEN HUYSMAN
HEAD OF KIN CENTER FOR
DIGITAL INNOVATION


I amsterdam


EE
Elgar
Lauren Waardenburg
Marleen Huysman
Marlous Agterberg
MANAGING AI
WISELY
From Development to
Organizational Change in Practice


KIN Summer School 2022

Research node:

Radboud Centre for Artificial Intelligence

Directors:

Prof. Marcel van Gerven

Prof. Dr. Bert Kappen

Dr. Ahmed Khalifa

Year of establishment:

2019

Number of researchers:

51-100

Parent organizations:

Radboud University

Radboud Univeristy Medical Centre

Contact information:

Topics of expertise

automated reasoning and inference, computer vision, ethical AI, human interfaces, intelligent robotics, machine lea natural language processing, planning and action, reasoning under uncertainty, knowledge representation, cognitic multi-agent systems

Selected publications, peer-reviewed

- G. Ras, N. Xie, M. van Gerven, D. Doran, "Explainable deep learning: A field guide for the uninitiated", Journal of Artificial Intelligence Research, vol. 73, pp. 329-397, 2022
- W. Bulten, et al., "Automated deep-learning system for Gleason grading of prostate cancer using biopsies: a diagnostic study", The Lancet Oncology, vol. 21, no. 2, pp. 233-241, 2020
- Y. Shapovalova, T. Heskes, T. Dijkstra, "Non-parametric synergy modeling of chemical compounds with Gaussian processes", BMC bioinformatics, vol. 23, no. 1, pp. 1-30, 2022
- M. Larson, M. Soleymani, G. Gravier, B. Ionescu, G. J. Jones, "The benchmarking initiative for multimedia evaluation: MediaEval", IEEE MultiMedia, vol. 24, no. 1, pp. 93-96, 2017
- M. Riveiro, S. Thill, "That's (not) the output I expected! On the role of end user expectations in creating explanations of AI systems". Artificial Intelligence, vol. 298, pp. 103507, 2021
- L. D. van de Braak, M. Dingemanse, I. Toni, I. van Rooij, M. Blokpoel, "Computational challenges in explaining communication: How deep the rabbit hole goes", Annual Meeting of the Cognitive Science Society, vol. 43, no. 43, 2021

Selected projects, funded by the European Commission or national agencies

- NeuraViPeR "Neural active Visual Prosthetics for Restoring function: Restoring Vision Through Electrical Stimulation of Cortex"
- INTENSE (It develops brain implants to improve the lives of people who are blind, deaf or paralyzed, or who have epilepsy. The research combines the greatly increased knowledge about our brains with new possibilities within neurotechnology)
- NESTOR "Neuronal Stimulation for Recovery of Function. The creation of a cortical visual prosthesis"
- SPIKEFERENCE "Spike-driven deep active inference for sequential goal behaviours", European Commission (FET flagship the Human Brain Project)

Related study programmes, doctoral or master levels

- M.Sc. in Artificial Intelligence (cognitive computing track and intelligent systems track), Radboud Univeristy
- M.Sc. in Information Sciences, Radboud University


Radboud Universiteit

aimlab

Research node:
AIM lab-Artificial intelligence for medical imaging

Directors:
Prof. Cees Snoek
Prof. Marcel Worring

Year of establishment:
2019

Number of researchers:
1-10

Parent organizations:
University van Amsterdam

Inception Institute of Artificial Intelligence

Contact information:

Topics of expertise

Computer vision, knowledge representation, machine learning, natural language processing

Selected publications, peer-reviewed

- Z. Xiao, J. Shen, X. Zhen, L. Shao, C. Snoek, "A bit more Bayesian: Domain-invariant learning with uncertainty", International conference on machine learning (ICML), 2021
- M. Derakhshani, X. Zhen, L. Shao, C. Snoek, "Kernel continual learning", International conference on machine learning (ICML), 2021
- Y. Du, X. Zhen, L. Shao, C. Snoek, "Hierarchical variational memory for few-shot learning across domains", International conference on learning representations (ICLR), 2022
- J. Shen, X. Zhen, M. Worring, L. Shao, "Variational multi-task learning with Gumbel-softmax Priors", Neural information process systems (NeurIPS), 2021
- T. van Sonsbeek, X. Zhen, M. Worring, L. Shao, "Variational knowledge distillation for disease classification in chest x-rays", Information processing in medical imaging (IPMI), 2021
- I. Najdenkoska, X. Zhen, M. Worring, L. Shao, "Variational topic inference for chest x-ray report generation", International conference on medical image computing and computer assistant interventions (MICCAI), 2021

Selected projects, funded by the European Commission or national agencies

- AIM lab, Inception Institute of Artificial Intelligence and University of Amsterdam (Public-Private Partnership), 2019-2024

Related study programmes, doctoral or master levels

- Master AI, University van Amsterdam

Research node:

Centre of Expertise Applied Artificial Intelligence

Directors:

Dr. Nanda Piersma

Dr. Geert Wissink

Year of establishment:

2020

Number of researchers:

21-50

Parent organizations:

Amsterdam University of Applied Sciences

Contact information:

Topics of expertise

Ethical AI, human interfaces, intelligent robotics, machine learning, multi-agent systems, natural language processing, cognition and AI, knowledge representation

Selected publications, peer-reviewed

- K. Rauwerda, F. J. De Graaf, "Heuristics in financial decision-making: the selection of SME financing by advisers in an increasingly diverse market", Management Decision, vol. 59, no. 7, pp. 1728-1749, 2021
- M. Fuckner, S. Bašić, P. Wiggers, "Algorithm curation and the emergence of filter bubbles: An ABM approach", ICT.OPEN, 2022 (abstract)
- J. R. Helmus, M. H. Lees, R. van den Hoed, "A data driven typology of electric vehicle user types and charging sessions", Transportation Research Part C: Emerging Technologies, vol. 115, pp. 102637, 2020
- A. Bouwer, I. Dekker, B. Bredeweg, "Smart education: Derde projectjaar", 2022
- I. Timmer, R. Rietveld, "Rule-based systems for decision support and decision-making in Dutch legal practice. A brief overview of applications and implications", Droit et societe, vol. 3, pp. 517-534, 2019
- S. Bašić, M. Fuckner, P. Wiggers, "Exploring bias in data and models for misinformation detection from text", ICT.OPEN, 2022 (abstract)

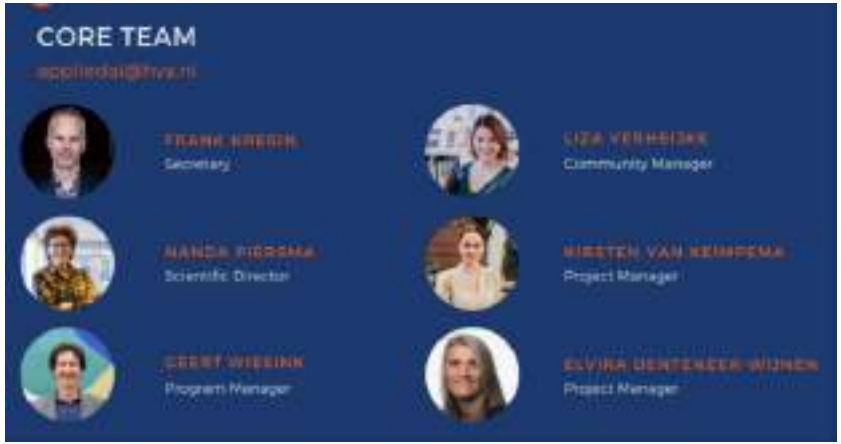
Selected projects, funded by the European Commission or national agencies

- AI, Media en Democratie ELSA Lab, NWO, 2022-ongoing
- AI4students, Comenius Leadership Fellow, 2022-2025
- LESSEN, NWA, 2022-2026
- SPRONG Programma Responsible Applied AI (RAAI), SIA, 2022-2030

Related study programmes, doctoral or master levels

- Master Digital Driven Business, Centre for Market Insights
- Master Applied Artificial Intelligence, Centre of Expertise AAI


COE APPLIED AI
Responsible AI Lab
Centre for Market Insights
Legal Tech Lab
Smart Asset Management Lab
Smart Health and Vitality Lab
Smart Education Lab
Centre for Financial Innovation


CORE TEAM
Secretary
Community Manager
Scientific Director
Project Manager
Program Manager
Project Manager


AI
TECHNOLOGY FOR PEOPLE
NewScientist


CENTRE OF EXPERTISE
APPLIED AI

TU Delft | AI Initiative

Research node:
TU Delft AI Initiative

Directors:
Prof. Geert-Jan Houben

Year of establishment:
2020

Number of researchers:
101+

Parent organizations:
TU Delft

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- F. A. Oliehoek, S. Witwicki, L. P. Kaelbling, "A sufficient statistic for influence in structured multiagent environments", Journal of Artificial Intelligence Research, vol. 70, pp. 789-870, 2021
- T. D. Simão, N. Jansen, M. T. J. Spaan, "AlwaysSafe: Reinforcement learning without safety constraint violations during training", Int. Conference on Autonomous Agents and Mul Agent Systems (AAMAS), pp. 1226–1235, 2021
- M.M. de Weerdt, B. Clementy, "Introduction to planning in multiagent systems", Multiagent and Grid Systems, vol. 05, no. 04, pp. 345-355, 2009
- A. M. A. Balayn, C. Lofi, G. J. P. M. Houben, "Managing bias and unfairness in data for decision support", The VLDB Journal vol. 30, pp. 739-768, 2021
- Z. Sun, J. Yang, J. Zhang, A. Bozzon, L. K. Huang, C. Xu, "Recurrent knowledge graph embedding for effective recommendation", Conference on Recommender Systems (RecSys), pp. 297-305, 2018
- M. Johnson, J. M. Bradshaw, P. J. Feltovich, C. M. Jonker, M. Birna Van Riemsdijk, M. Sierhuis, "Coactive design: Designing support for interdependence in joint activity", Journal of Human-Robot Interaction, vol. 03, no. 01, pp. 43-69,. 2014

Selected projects, funded by the European Commission or national agencies

- "AI for Computational Life Sciences", Medical Delta (programme #14), 2021-2026
- HI "Hybrid Intelligence: augmenting human intellect", NWO (Gravitation, grant no. 024.004.022), 2020-2029
- "ELSA Lab Defence", NWO (AiNed Groeifonds, grant no. 1332.20.008), 2022-2027
- NextGenOpt "Next Generation Sector-Coupling Models for Optimal Investments and Operation" NWO (ESI-far, grant no. ESI.2019.008), 2022-2026

Related study programmes, doctoral or master levels

- MSc Computer Science, TU Delft
- MSc Robotics, TU Delft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ADRO
ILAB
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UIDS
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MANL
NLAB
BIOL
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BIOMORP
HIC LAB
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SIRI
RISI
IRIS
MACH
CHI
NA
SELF
LFLA
LABS
BSENS
SORAI
AILAB
SLIM
MLAB
LABS
XAIT
AITL
TLAB

Research node:
National Police Lab AI Utrecht

Directors:
Prof. dr. Floris Bex

Year of establishment:
2019

Number of researchers:
11-20

Parent organizations:
Utrecht University

Innovation Centre for Artificial Intelligence (ICAI)

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, commonsense reasoning, ethical AI, knowledge representation, machine learning, multi-agent systems, natural language processing, reasoning under uncertainty

Selected publications, peer-reviewed

- M. Robeer, F. Bex, A. Feelders, "Generating realistic natural language counterfactuals. Findings of the Association for Computational Linguistics", EMNLP, 2021
- R. Wieten, F. Bex, H. Prakken, S. Renooij, "Information graphs and their use for Bayesian network graph construction", International Journal of Approximate Reasoning, vol. 136, pp. 249-280, 2021
- A. Borg, F. Bex, "Explaining arguments at the Dutch national police. AI approaches to the complexity of legal systems XI-XII", Lecture Notes in AI, pp. 183-197, 2021
- D. Odekerken, A. Borg, F. Bex, "Estimating stability for efficient argument-based inquiry", International Conference on Computational Models of Argument (COMMA), 2020
- M. van den Hurk, F. Dignum, "Towards fundamental models of radicalization", Social Simulation Conference (SSC), 2019
- D. Craandijk, F. Bex, "Deep learning for abstract argumentation semantics", International Joint Conference on Artificial Intelligence (IJCAI), pp. 1667-1673, 2020

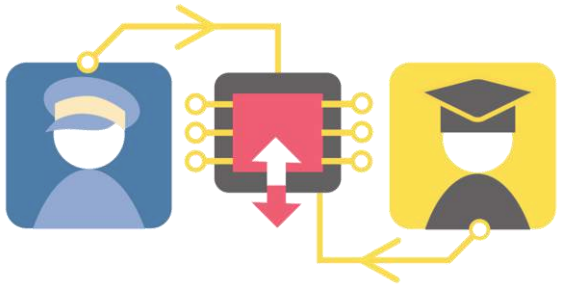
Selected projects, funded by the European Commission or national agencies

- AI4Intelligence, NWO, 2022-2027
- ALGOPOL, NWO, 2020-2024
- "Intelligence Amplification for Cybercrime", Netherlands National Police, 2016-2020

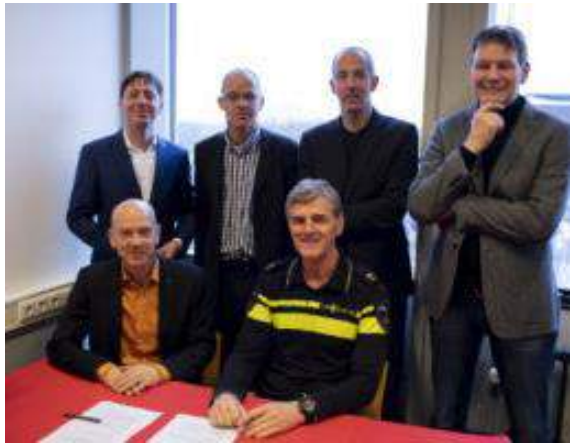
Related study programmes, doctoral or master levels

- Artificial Intelligence, Utrecht University


POLITIE




DATABEHEER
SYMBOLISCH
DE MENS CENTRAAL



Research node:
Civic AI Lab Institute of Informatics (IvI)

Directors:
Sennay Ghebreab
Jacco v. Ossenbruggen
Hinda Haned

Year of establishment:
2020

Number of researchers:
11-20

Parent organizations:
University of Amsterdam, Vrije Universiteit, City of Amsterdam

Ministry of the Interior and Kingdom Relations

Contact information:

Topics of expertise
Computer vision, machine learning, ethical AI

Selected publications, peer-reviewed

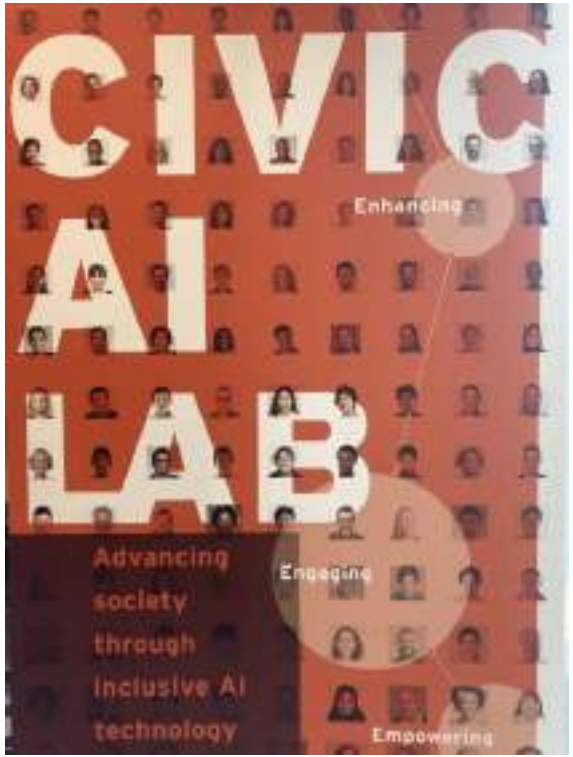
- F. P. Santos, Y. Lelkes, S. A. Levin. "Link recommendation algorithms and dynamics of polarization in online social networks." National Academy of Sciences, vol. 118, no. 50, 2021
- F. P. Santos, J. M. Pacheco, F. C. Santos, "The complexity of human cooperation under indirect reciprocity", Philosophical Transactions of the Royal Society B, vol. 376, no. 1838, 2021
- A. S. Teixeira, F. C. Santos, A. P. Francisco, F. P. Santos, "Eliciting Fairness in N-Player Network Games through Degree-Based Role ...", no. 6851477, 2021
- R. Merhej, F. P. Santos, F. S. Melo, F. C. Santos, "Cooperation between independent reinforcement learners under wealth inequality and collective risks", International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2021
- A. Lucic, H. Oosterhuis, H. Haned, M. de Rijke, "FOCUS: Flexible optimizable counterfactual explanations for tree ensembles", Conference on Artificial Intelligence (AAAI), 2022

Selected projects, funded by the European Commission or national agencies

- CommuniCity, "Innovative Solutions Responding to the Needs of Cities & Communities", European Commission
- PhD projects within Civic AI Lab and Socially Intelligent Artificial Systems (SIAS) group, University of Amsterdam

Related study programmes, doctoral or master levels

- M.Sc. in Artificial Intelligence, M.Sc. in Computational Science, University of Amsterdam
- Other programs, University of Amsterdam


CIVIC
AI
LAB
Enhancing
Advancing
society
through
inclusive AI
technology
Engaging
Empowering

Utrecht University

Research node:

Artificial Intelligence Research Group at the Institute of Digital Games

Directors:

Prof. Georgios N. Yannakakis

Dr. Antonios Liapis

Dr. Ahmed Khalifa

Year of establishment:

2013

Number of researchers:

21-50

Parent organizations:

Utrecht University

Contact information:

Topics of expertise

cognition and AI, automated reasoning and inference, computer vision, heuristic search, human interfaces, machine learning

Selected publications, peer-reviewed

- K. Makantasis, A. Liapis and G. N. Yannakakis, "The pixels and sounds of emotion: General-purpose representations of arousal in games", IEEE Transactions on Affective Computing, early access
- J. Liu, S. Snodgrass, A. Khalifa, S. Risi, G. N. Yannakakis and J. Togelius, "Deep learning for procedural content generation", Neural Computing and Applications, vol. 33, no. 1, pp. 19-37, January 2021
- D. Gravina, A. Khalifa, A. Liapis, J. Togelius and G. N. Yannakakis, "Procedural content generation through quality diversity", in Proceedings of the IEEE Conference on Games (CoG), 2019, pp. 1-8
- G. N. Yannakakis and J. Togelius, "Artificial Intelligence and Games", Springer Nature, 2018
- G. N. Yannakakis, R. Cowie and C. Busso, "The ordinal nature of emotions: An emerging approach", IEEE Transactions on Affective Computing, vol. 12, no. 1, pp. 16-35, Jan.-March 2018
- G. N. Yannakakis, A. Liapis and C. Alexopoulos, "Mixed-initiative co-creativity", in Proceedings of the International Conference on the Foundations of Digital Games (FDG), Florida, USA, April 2014, pp. 1-8

Selected projects, funded by the European Commission or national agencies

- AI4Media "A European Excellence Centre for Media, Society and Democracy", European Commission (grant no. 951911), 2020-2024
- LAW-GAME "An Interactive, Collaborative Digital Gamification Approach to Effective Experiential Training and Prediction of Criminal Actions", European Commission (grant no. 101021714), 2020-2024
- PrismArch "Virtual reality aided design blending cross-disciplinary aspects of architecture in a multi-simulation environment", European Commission (grant no. 952002), 2020-2022
- Tamed "Tensor-bAsed Machine learning towards genEral moDels of affect", European Commission (grant no. 101003397), 2020-2022

Related study programmes, doctoral or master levels

- Ph.D. in Game Technology, Game Analysis, and Game Design, University of Malta
- M.Sc. in Digital Games, University of Malta

AI MEDIA LAB

Research node:
AI & Media Lab

Directors:
Prof. Dr. Dr. Remco Veltkamp
Drs. Hans de Clercq
ir. Frank Visser

Year of establishment:
2020

Number of researchers:
11-20

Parent organizations:
Utrecht University

University of Applied Sciences Utrecht

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, human interfaces, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- J. D. Fijnheer, H. van Oostendorp, G.-J. Giezeman, R. C. Veltkamp, "Competition in a household energy conservation game", Sustainability, vol. 13, no. 21, pp. 11991, 2021
- J. W. H. Tangelder, R. C. Veltkamp, "A survey of content based 3D shape retrieval methods" Multimedia tools and applications, vol. 39, no. 3, pp. 441-471, 2007
- F. Pessanha, A. A. Salah, T. van Loon, R. C. Veltkamp, "Facial image-based automatic assessment of equine pain" IEEE Transactions on Affective Computing, 2022
- S. Leijnen, F. V. Veen, "The neural network zoo", MDPI Proceedings, vol. 47, pp. 1:9, 2020
- J. Frommel, V. Sagl, A. E. Depping, C. Johanson, M. K. Miller, R. L. Mandryk, "Recognizing affiliation: Using behavioural traces to predict the quality of social interactions in online games", CHI, pp. 1-16, 2020.
- K. Van Es, M. Wieringa, M. T. Schäfer, "Tool criticism: From digital methods to digital methodology", International Conference on Web Studies, pp. 24-27, 2018

Selected projects, funded by the European Commission or national agencies

- "Game design, AI, system modeling: Long-term consumer and community empowerment in energy", NOW (NWO KIC call Energy transition as a socio-technical challenge)
- JUMP "Responsible Applied AI", NOW (grant no. SPR.ALG.01.024), 2022-2026
- DRAMA "Designing responsible AI for media applications", NOW (RAAK), 2021-2023

Related study programmes, doctoral or master levels

- Ph.D. in ICS, M.Sc. Applied Data Science, AI, Game and Media T., and Human Computer Interaction at Utrecht University
- M.Sc. Human-Centered Artificial Intelligence and M.A. Data-Driven Design, University of Applied Sciences Utrecht

Utrecht University

Research node:
Multimedia Research Group

Directors:
Prof. Dr. Dr. Remco Veltkamp

Year of establishment:
2009

Number of researchers:
21-50

Parent organizations:
Utrecht University

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, human interfaces, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- S. Zhang, S. Bakkes, D. Roijers, P. Spronck, "Avatars of a feather flock together-Gender homophily in online video games revealed via exponential random graph modelling", IEEE Transactions on Games, vol. 12, no. 1, pp. 86-100, 2019
- J. W. H. Tangelder, R. C. Veltkamp, "A survey of content based 3D shape retrieval methods", Multimedia tools and applications, vol. 39, no. 3, pp. 441-471, 2007
- A. Brons, A. de Schipper, S. Mironcika, H. Toussaint, B. Schouten, S. Bakkes, B. Kröse, "Assessing children's fine motor skills with sensor-augmented toys: Machine learning spproach", Journal of Medical Internet Research, vol. 23, no. 4, 2021
- H. V. Koops, W. B. de Haas, J. Bransen, A. Volk, "Automatic chord label personalization through deep learning of shared harmonic interval profiles", Neural Computing and Applications, pp. 1-11, 2018
- E. Reid, R. L. Mandryk, N. A. Beres, M. Klarkowski, J. Frommel, "Bad vibrations": Sensing toxicity from in-game audio features", IEEE Transactions on Games, 2022
- A. V. Nieuwenhuijsen, J. A. Burgoyne, F. Wiering, M. A. Sneekes, "A simple method for user-driven music thumbnailing", International Society for Music Information Retrieval Conference, pp. 223-230, 2020

Selected projects, funded by the European Commission or national agencies

- eHealthJunior "The development of eHealth applications for youth with chronic disease", NOW (NWA ORC, grant no. NWA.1292.19.226), 2021-2028
- AGI-LO "Applied Gaming Intervention for reducing Loneliness of Children with Chronic Diseases", TKI Health~Holland. 2019-2021
- COGITCH "Cognition guided interoperability between collections of musical heritage", NOW (NWA CATCH, grant no. 640.005.004), 2012-2017
- Real-time Intelligence "Development of a real-time intelligence dashboard for the police emergency control center", National Police, 2019-2025

Related study programmes, doctoral or master levels

- Ph.D. in Information and Computing Sciences, Utrecht University
- M.Sc. Applied Data Science, AI, Game and Media Technology, and Human Computer Interaction, Utrecht University

Innovation Center for Artificial Intelligence

Research node:

Innovation Center for Artificial Intelligence

Directors:

Prof. Dr. Maarten de Rijke

Esther Smit, Business director

Year of establishment:

2018

Number of researchers:

101+

Parent organizations:

University of Amsterdam and Vrije Universiteit Amsterdam

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, commonsense reasoning, computer vision, cognition and AI, constraint processing, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- ICAI is set up with multiple Labs across the country who all do research in AI on specific topics. An overview of the labs and location with the research they conduct can be found here: https://icai.ai/locations/
- 2018: (1) QUVA Lab, (2) Delta Lab, (3) AIRLab Amsterdam, (4) Police AI Lab, (5) AIRLab Delft, (6) Discovery Lab
- 2019: (7) Thira Lab, (8) AI for FinTech Lab, (9) AIM Lab, (10) Radboud AI for Health, (11) TomTom Atlas Lab
- 2020: (12) KPN Responsible AI Lab, (13) Donders AI for Neurotech Lab, (14) EAISI AIMM Lab, (15) Civic AI Lab, (16) AI for Agro-Food Lab, (17) Cultural AI Lab
- 2021: (18) AI for Bioscience Lab, (19) EAISI FAST Lab, (20) EAISI Mobility Lab, (21) AI for Precision Health, Nutrition & Behavior, (22) e/MTIC AI-Lab, (23) Utrecht AI & Mobility Lab, (24) AI-RONDO, (25) AI for Oncology lab, (26) Mercury Machine Learning Lab, (27) MasterMinds Lab, (28) POP-AART Lab, (29) Brightlands Smart Health Lab
- 181 papers published in 2021

Selected projects, funded by the European Commission or national agencies

- ICAI is funded by the University of Amsterdam, and the Dutch AI Coalition
- ICAI has the mission to keep the Netherlands at the forefront of knowledge and talent development in AI. Creating and nurturing a national AI knowledge and talent ecosystem is our central aim. In doing so, we as an organization want to deal sustainably with resources that arise from the activities and further activate the resources in the Netherlands. We established six main pillars to achieve this:
  - Labs
  - Academy
  - Experts
  - Launchpad
  - Connector
  - Venture

Related study programmes, doctoral or master levels

- 166 PhD students in the labs
- Open MOOC for professionals: https://icai.ai/ai-in-practice/


ICAI


Innovation Center for
Artificial Intelligence

Research node:
AI Fluids Lab

Directors:
Dr. Anh Khoa Doan
Dr. Davide Modesti

Year of establishment:
2021

Number of researchers:
11-20

Parent organizations:
Delft University of Technology

Contact information:

Topics of expertise

Automated reasoning and inference, knowledge representation, machine learning, multi-agent systems

Selected publications, peer-reviewed

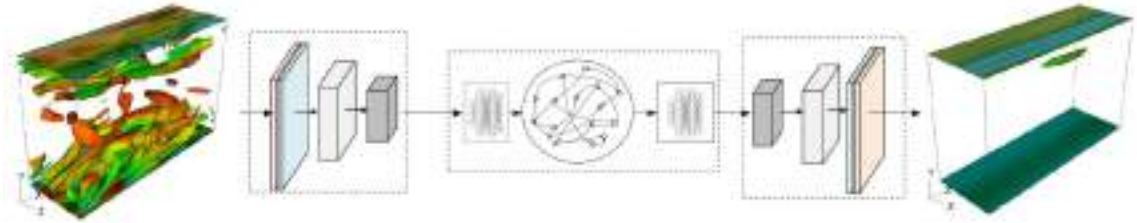
- N.A.K. Doan, W. Polifke, and L. Magri, “Auto-encoded reservoir computing for turbulence learning”, Lect. Notes Comput. Sci. - ICCS2021, vol. 12746, pp. 344–351, 2021
- L. Magri and N.A.K. Doan, “Physics-informed data-driven prediction of turbulent reacting flows with Lyapunov analysis and sequential data assimilation,” Data Analysis for Direct Numerical Simulation of Turbulent Combustion, Springer, 2020
- D. Modesti. "A priori tests of eddy viscosity models in square duct flow", Theor. Comput. Fluid Dyn. Vol. 34, pp. 713-734, 2020
- M. P. Sitte and N.A.K. Doan, “Velocity reconstruction in puffing pool fires with physics-informed neural networks”, Physics of Fluids, vol. 34, 087124, 2022
- K. Jigjid, et al., “SGS reaction rate modelling for MILD combustion based on machine-learning combustion mode classification: Development and a priori study”, Proceedings of the Combustion Institute, 2022
- M. Lesjak and N.A.K. Doan, “Chaotic systems learning with hybrid echo state network/proper orthogonal decomposition based model”, Data-centric Engineering, vol. 2, e16 (2022)

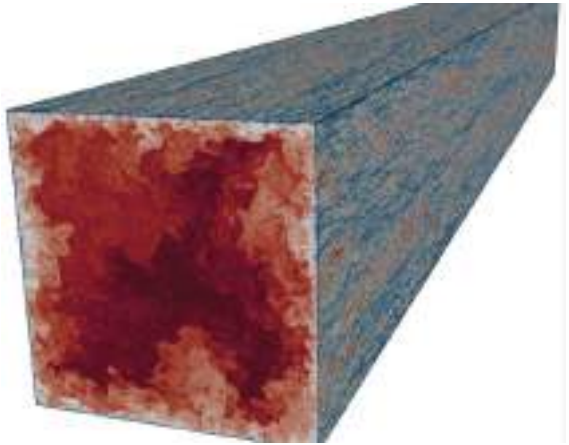
Selected projects, funded by the European Commission or national agencies

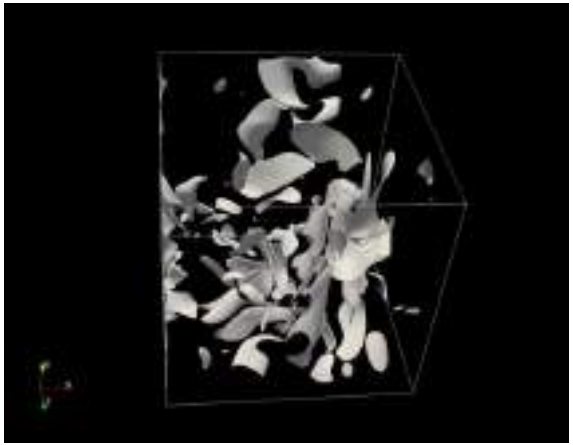
- PINNTFlows "Physics-Informed Neural Networks for Turbulent Flows", PRACE-DECI (grant no. 15DECI0402), 2021
- "INSULATE: dIrect Numerical SimULAtion of Turbulent boundary layers over acoustic linErs", PRACE, 2021
- "INTAkE–understandINg Turbulence over porous surfaces: towards efficient Acoustic linErs for aircraft engines", PRACE, 2020

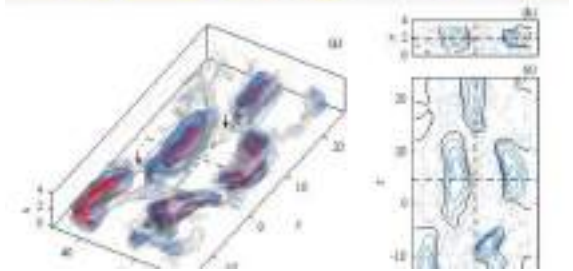
Related study programmes, doctoral or master levels

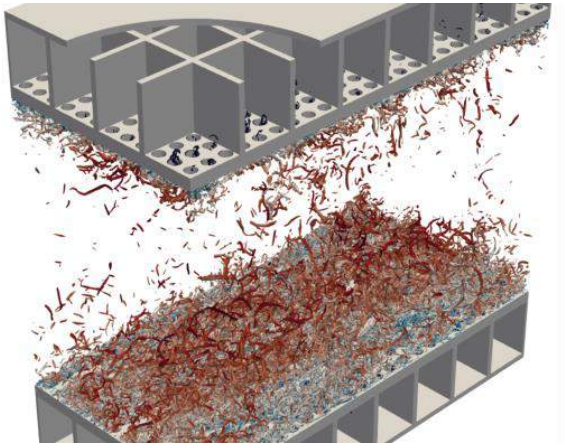
- Delft AI Initiative doctoral programme, Delft University of Technology
- Engineering with AI – BSc Minor, Delft University of Technology











Research node:
Center of Excellence in AI for structures

Directors:
Dr.ir. Dimitrios Zarouchas

Year of establishment:
2021

Number of researchers:
11-20

Parent organizations:
Delft University of Technology

Contact information:

Topics of expertise

Time series, stochastic analysis, data fusion, structural health monitoring data, aerospace, education

Selected publications, peer-reviewed

- C. Nastos, and D.Zarouchas, “Probabilistic failure analysis of quasi-isotropic CFRP structures utilizing the stochastic finite element method and the Karhunen-Loeve expansion methods”, Composites Part B: Engineering, vol. 109742, 2022
- T. Loutas, N. Eleftheroglou, and D. Zarouchas, “A data-driven probabilistic framework towards the in-situ prognostics of fatigue life of composites based on acoustic emission data”, Composite Structures, vol. 161, pp. 522-529, 2017
- N. Eleftheroglou, D. Zarouchas, T. Loutas, R. Alderliesten, R. Benedictus, “Structural health monitoring data fusion for in-situ life prognosis of composite structures”, Reliability Engineering & System Safety, vol. 178, pp. 40-54, 2018

Selected projects, funded by the European Commission or national agencies

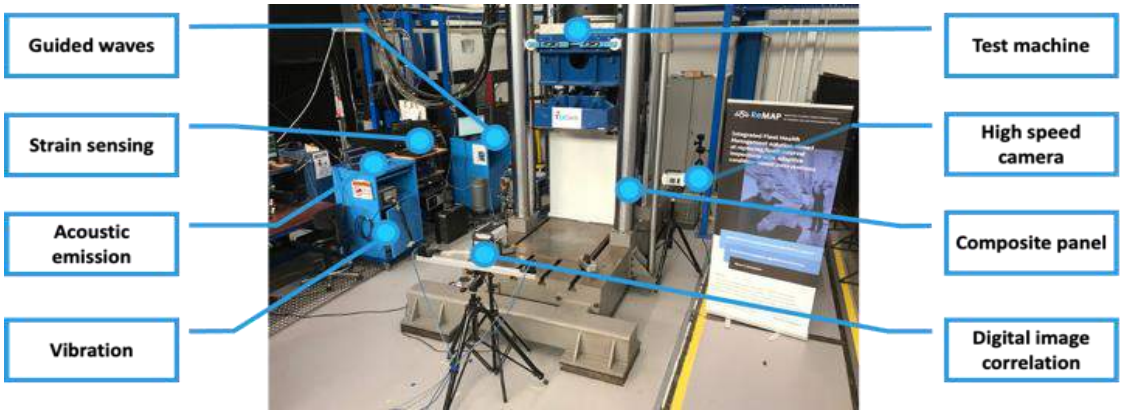
- ReMAP, European Commission (H2020, grant no. 769288)
- MORPHO “Embedded Life-cycle management for smart multimaterials structures: application to engine components”, European Commission (H2020, grant no. 101006854)
- ENHANCE “European training network in intelligent prognostics and health management in composite structures”, European Commission (H2020, grant no. 859957)

Related study programmes, doctoral or master levels

- Doctoral Education Program TU Delft, TU Delft


Dr. Nick Eleftheroglou – Alumni
Prognostics & Stochastic Modelling
Dr. Milad Saeedifar
Post-Doctoral Researcher
Digital twins & SHM
Panos Kozaninos
PhD Candidate
Deep & Reinforcement learning
Dr. Wandong Wang - Alumni
Fatigue & Damage Mechanics
Agnes Broer-Reinoso Rondinel
PhD Candidate
SHM & advanced data analytics
Xi Li
PhD Candidate
Fatigue & Damage Mechanics
CENTER OF EXCELLENCE
Artificial Intelligence for Structures
Pythia Team
Artificial Intelligence for Structures, Prognostics & Health Management
TUDelft
SCAN ME
Morteza Moradi
PhD Candidate
Intelligent design for health indicators
Dr. Nan Yao
Post-Doctoral Researcher
SHM & Uncertainty measurements
Ferda Canru
PhD Candidate
Prognostics with guided waves
Dr. Dimitrios Zarouchas
Associate Professor – Pythia team leader
Dr. Christos Nastos
Post-Doctoral Researcher
Digital Twins & Health Management


TUDelft


Guided waves
Strain sensing
Acoustic emission
Vibration
Test machine
High speed camera
Composite panel
Digital image correlation

Radboud University | Radboud umc

Research node:
Radboud Artificial Intelligence

Directors:
Prof. dr. Marcel van Gerven
Prof. dr. Tom Heskes
Prof. dr. Henkjan Huisman
Prof. dr. Martha Larson

Year of establishment:
2019

Number of researchers:
170

Parent organizations:

Contact information:

Topics of expertise

automated reasoning and inference, computer vision, ethical AI, human interfaces, intelligent robotics, machine learning, natural language processing, planning and action, reasoning under uncertainty, knowledge representation, cognition and AI, multi-agent systems

Selected publications, peer-reviewed

- T. Heskes, E. Sijben, I. Bucur, T. Claassen. "Causal shapley values: Exploiting causal knowledge to explain individual predictions of complex models," in NeurIPS, 33, 2020, pp. 4778-4789.
- Y Hogewind, TD Simao, T Kachman, N Jansen. "Safe reinforcement learning from pixels using a stochastic latent representation," in ICLR, 2023.
- N. Alves, J. Bosma, K. Venkadesh, C. Jacobs, Z. Saghir, M. de Rooij, J. Hermans and H. Huisman, "Prediction Variability to Identify Reduced AI Performance in Cancer Diagnosis at MRI and CT", *Radiology,* 2023;308(3):e230275
- J. Linmans, S. Elfwing, J. van der Laak and G. Litjens, "Predictive uncertainty estimation for out-of-distribution detection in digital pathology.", *Medical Image Analysis,* 2023;83:102655.
- N. Ahmad, N., E. Schrader, & M. van Gerven. "Constrained parameter inference as a principle for learning". *Transactions on Machine Learning Research*, 1–18. 2023.
- Z. Zhao, Z. Liu and M. Larson, "Adversarial Image Color Transformations in Explicit Color Filter Space," in IEEE Transactions on Information Forensics and Security, vol. 18, pp. 3185-3197, 2023, doi: 10.1109/TIFS.2023.3275057.
- L. van Bemmel, Z. Liu, N. Vaessen and M. Larson, "Beyond Neural-on-Neural Approaches to Speaker Gender Protection," ICASSP 2023 - 2023 IEEE Int. Conference on Acoustics, Speech and Signal Processing (ICASSP), Rhodes Island, Greece, 2023, pp. 1-5, doi: 10.1109/ICASSP49357.2023.10096668.
- S. Dalm, N. Ahmad, L. Ambrogioni & M. van Gerven. "Gradient-adjusted incremental target propagation provides effective credit assignment in deep neural networks. *Transactions on Machine Learning Research*, 1–12. 2023

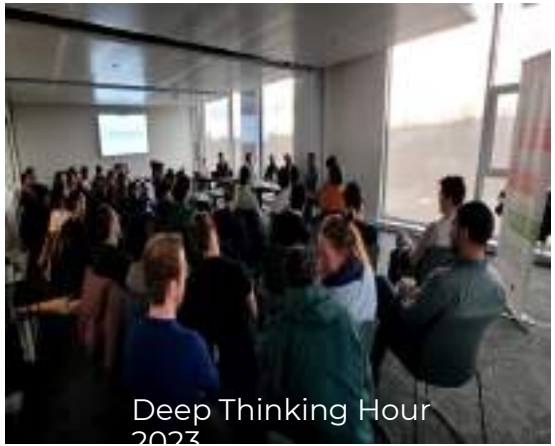
Selected projects, funded by the European Commission or national agencies

- AiNed Fellowship Grant for research into cell films: AiNed Fellowship Grant for research into cell films | Radboud University (ru.nl)
- AiNed Fellowship Grant for Dr. Inge Wortel: AiNed Fellowship Grant for Dr. Inge Wortel | NWO
- NWO ICAI: https://icai.ai/icai-labs/asmpt/
- NWO Gravity: https://dbi2.nl
- Pancaim project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101016851, project PANCAIM: www.pancaim.eu
- EU FET project: https://www.neuraviper.eu
- digital Humanities Artificial Intelligence Cultural heritage: HAICu - Home

Related study programmes, doctoral or master levels

- Master programme Data Science: Master's Specialisation in Data Science - Data Science (ru.nl)
- Bachelor programme Artificial Intelligence: Artificial Intelligence | Radboud University (ru.nl)
- Master programme Artificial Intelligence: Artificial Intelligence | Radboud Universiteit (ru.nl)


NeurIPS Fest 2023


Deep Thinking Hour 2023


Delta Lab 2 Showcase 2023


ELLIS, AI4media, and AIDA Symposium on Large Language and Foundation Models, 2023


NeurIPS Fest 2022


Deep Learning Extravaganza 20

Research node:
ELLIS unit Amsterdam

Directors:
Prof. Dr. Cees Snoek

Year of establishment:
2020

Number of researchers:
51-100

Parent organizations:
University of Amsterdam

ELLIS Society Network

Contact information:

Topics of expertise

Selected publications, peer-reviewed

- **Zehao Xiao, Jiayi Shen, Xiantong Zhen,** Ling Shao, **Cees GM Snoek**. "A Bit More Bayesian: Domain-Invariant Learning with Uncertainty", International Conference on Machine Learning (ICML), 2021
- W Kool, **H Van Hoof, M Welling**. "Stochastic beams and where to find them: The gumbel-top-k trick for sampling sequences without replacemen" International Conference on Machine Learning, 509-525, 2019
- Nikos Voskarides, Dan Li, Pengjie Ren, **Evangelos Kanoulas, Maarten de Rijke**. "Query Resolution for Conversational Search with Limited Supervision", SIGIR 2020: 43rd international ACM SIGIR conference on Research and Development in Information Retrieval, 2020
- **Jiayi Shen, Zehao Xiao, Xiantong Zhen, Cees Snoek, Marcel Worring**. "Association graph learning for multi-task classification with category shifts", Advances in Neural Information Processing Systems, 2022.
- Jirui Qi, **Raquel Fernández**, Arianna Bisazza. "Cross-Lingual Consistency of Factual Knowledge in Multilingual Language Models", Conference on Empirical Methods in Natural Language Processing. (EMNLP), 2023
- **Y Zhang, S You, T Gevers**. "Orthographic Projection Linear Regression for Single Image 3D Human Pose Estimation", 2020 25th International Conference on Pattern Recognition (ICPR), pp. 8109-8116, 2020

Selected projects, funded by the European Commission or national agencies

- **European Lighthouse of AI for Sustainability (ELIAS) Project, EC, HORIZON-CL4-2022-HUMAN-02-02**
- **AI, Data and Robotic Ecosystem (Adra-e) Project, EC, HORIZON-CL4-2021-HUMAN-01-02**
- **The Innovation Centre for Artificial Intelligence (ICAI) Project, nationally-funded**
- **The European Network of AI Excellence Centres (ELISE) Project, 2020, HORIZON-ICT48-2020**

Related study programmes, doctoral or master levels

- ELLIS unit Amsterdam's PhD and Postdoc Programme, University of Amsterdam
- ELLIS unit Amsterdam MSc Honours Programme, University of Amsterdam

Research node:
ELLIS unit Delft

Directors:
Dr. Frans A. Oliehoek
Prof. Robert Babuska
Dr. Jens Kober

Year of establishment:
2019

Number of researchers:
21-50

Parent organizations:
Delft University of Technology

Contact information:

Topics of expertise

cognition and AI, automated reasoning and inference, case-based reasoning, commonsense reasoning, computer vision, constraint processing, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, ML, multi-agent systems, NLP, planning and action, and reasoning under uncertainty

Selected publications, peer-reviewed

- E. Demirović et al., 'MurTree: Optimal Decision Trees via Dynamic Programming and Search', Journal of Machine Learning Research, vol. 23, no. 26, pp. 1–47, 2022.
- G. Neu and J. Olkhovskaya, 'Online learning in MDPs with linear function approximation and bandit feedback', in Advances in Neural Information Processing Systems, 2021, vol. 34, pp. 10407–10417.
- M. Loog, T. Viering, A. Mey, J. H. Krijthe, and D. M. J. Tax, 'A brief prehistory of double descent', Proceedings of the National Academy of Sciences, vol. 117, no. 20, pp. 10625–10626, 2020.
- J. F. P. Kooij, F. Flohr, E. A. I. Pool, and D. M. Gavrila, 'Context-Based Path Prediction for Targets with Switching Dynamics', International Journal of Computer Vision, vol. 127, no. 3, pp. 239–262, Mar. 2019.
- X. Zhang, Y. Sugano, M. Fritz, and A. Bulling, 'MPIIGaze: Real-World Dataset and Deep Appearance-Based Gaze Estimation', IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 41, no. 1, pp. 162–175, 2019.
- L. Buşoniu, T. de Bruin, D. Tolić, J. Kober, and I. Palunko, 'Reinforcement learning for control: Performance, stability, and deep approximators', Annual Reviews in Control, vol. 46, pp. 8–28, 2018.

Selected projects, funded by the European Commission or national agencies

- MMLL "Mercury Machine Learning Lab", ICAI, 2021-2026
- "Innate knowledge for Deep Learning", NWO Vidi, 2019-2024
- INTERACT "Intuitive Interaction for Robots among Humans", ERC Stg, 2022-2027
- AiDAPT "AI for a sustainable and resilient built environment", TU Delft AI Lab, 2023-2028

Related study programmes, doctoral or master levels

- PhD at TU Delft
- MSc at TU Delft (ELLIS members are involved in most MSc programs)

Research node:
Sequential Decision Making at dept. Intelligent Systems

Directors:
Dr. Frans Oliehoek
Dr. Matthijs Spaan

Year of establishment:
2023

Number of researchers:
21-50

Parent organizations:
Delft University of Technology

Contact information:

Topics of expertise
machine learning, multi-agent systems, planning and action, and reasoning under uncertainty

Selected publications, peer-reviewed

- F. A. Oliehoek, S. Witwicki, & L. P. Kaelbling. A sufficient statistic for influence in structured multiagent environments. Journal of Artificial Intelligence Research, 70, 789-870, 2021.
- M. Suau, J. He, M. M. Çelikok, M. T. J. Spaan & F. A. Oliehoek, "Distributed Influence-Augmented Local Simulators for Parallel MARL in Large Networked Systems". Advances in Neural Information Processing Systems, 35, pp. 28305-28318, 2022.
- W. Böhmer, V. Kurin, and S. Whiteson. Deep Coordination Graphs. *Proceedings of the 37th International Conference on Machine Learning*, PMLR 119:980-991, 2020.
- Q. Yang, T. D. Simão, S. H. Tindemans, M. T. J. Spaan. Safety-constrained reinforcement learning with a distributional safety critic. Machine Learning 112 (3), 859-887
- J. Olkhovskaya, J. Mayo, T. van Erven, G. Neu, & C.-Y. Wei: "First- and Second-Order Bounds for Adversarial Linear Contextual Bandits", Advances in Neural Information Processing Systems, 37, 2023.
- C. Schilling, A. Lukina, E. Demirović, K. Larsen . "Safety Verification of Decision-Tree Policies in Continuous Time", Advances in Neural Information Processing Systems, 37, 2023.

Selected projects, funded by the European Commission or national agencies

- INFLUENCE “Influence-based Decision-making in Uncertain Environments”, ERC, grant no. 758824, 2018-2023.
- “Reliable Out-of-Distribution Generalization in Deep Reinforcement Learning”, NWO open call M1, grant no. OCENW.M.21.234 , 2023-2027
- "Epistemic AI", EU FET-Open grant agreement No. 964505, 2021-2026
- Explainable Monitoring. NWO Veni, grant no. .222.119 2023-2026

Related study programmes, doctoral or master levels

- Master Computer Science, Delft University of Technology.
- Bachelor of Computer Science and Engineering , Delft University of Technology

NordSTAR
Nordic Center for Sustainable and Trustworthy AI Research

Research node:

Nordic Center for Sustainable and Trustworthy AI Research (NordSTAR)

Directors:

Prof. Pedro Lind

Prof. Anis Yazidi

Year of establishment:

2021

Number of researchers:

11-20

Parent organizations:

Oslo Metropolitan University

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, constraint processing, ethical AI, human interfaces, machine learning, multi-agent systems, reasoning under uncertainty

Selected publications, peer-reviewed

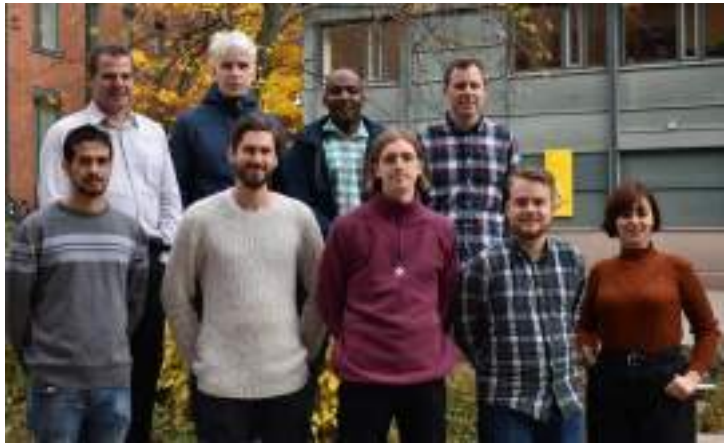
- K.Heiney, et al., "Criticality, connectivity, and neural disorder: A multifaceted approach to neural computation", Frontiers in Computational Neuroscience, vol. 15, no. 7, 2021
- A.Yazidi, et al., "A new decision making model based on Rank Centrality for GDM with fuzzy preference relations", European Journal of Operational Research, vol. 297, pp. 1030-1041, 2022
- D. T. Schroeder, et al., "The connectivity network underlying the German's Twittersphere: a testbed for investigating information spreading phenomena", Scientific Reports, vol. 12, no. 4085, 2022
- M. A. Riegler, et al., "Artificial intelligence in the fertility clinic: status, pitfalls and possibilities", Human Reproduction, vol. 36, no. 9, pp. 2429-2442, 2021
- A.M. Storås, et al., "Artificial intelligence in dry eye disease", The ocular surface, vol. 23, pp. 74-86, 2021
- V. Thambawita, et al., "DeepFake electrocardiograms using generative adversarial networks are the beginning of the end for privacy issues in medicine", Scientific Reports, vol. 11, no. 1, pp. 1-8, 2021

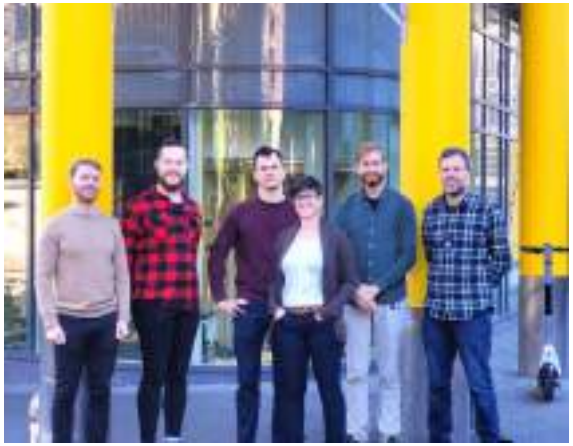
Selected projects, funded by the European Commission or national agencies

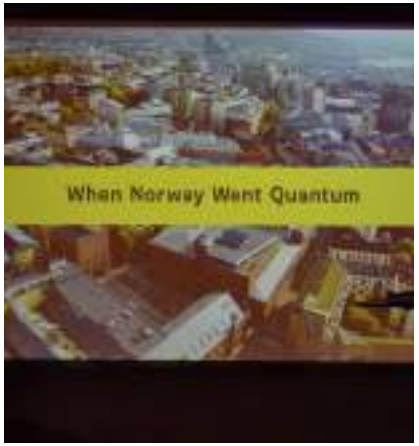
- DQUANT "Dissipative Quantum Chaos Perspective on Near-Term Quantum Computing", European Commission (Quantum Phenomena and Resources, grant no. 731473 and grant no. 101017733)
- AI-Mind "Artificial Intelligence for Dementia Prevention", European Commission (Horizon 2020, grant no.964220)
- SOCRATES "Self-Organizing Computational Substrates", Research Council Norway (IKTPLUSS RIA, grant no.270961)
- DeepCA "Hybrid Deep Learning Cellular Automata Reservoir", Research Council Norway (Young Research Talent, grant no. 286558)

Related study programmes, doctoral or master levels

- Master program: Applied Computer and Information Technology, Oslo Metropolitan University
- PhD program: Engineering Science, Oslo Metropolitan University






When Norway Went Quantum

AI WORK TEAM
University of Lodz

Research node:
AI Work Team

Directors:
Prof. Krzysztof Stefański

Year of establishment:
2021

Number of researchers:
1-10

Parent organizations:
University of Lodz

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, case-based reasoning, commonsense reasoning, ethical AI, human interfaces, intelligent robotics

Selected publications, peer-reviewed

- S. Wojtczak, "Endowing Artificial Intelligence with legal subjectivity", AI & SOCIETY, vol. 37, no. 1, pp. 205-213, 2022
- M. Otto, "Workforce Analytics" v Fundamental Rights Protection in the EU in the Age of Big Data", Comparative Labor Law and Policy Journals, vol. 40, no. 3
- K. Stefański, "The issue of the subjectivity of artificial intelligence acting for an employer", Studies on Labour Law and Social Policy, vol. 30, n. 2, April 2022

Selected projects, funded by the European Commission or national agencies

Related study programmes, doctoral or master levels


LLRN5

Research node:

R&D Center for Artificial Intelligence and Digital Economy

Directors:

Prof. Piotr Sankowski, CEO

Wojciech Kruszyński

Dr. Grażyna Żebrowska

Year of establishment:

2021

Number of researchers:

51-100

Parent organizations:

National Centre for Research and Development

Contact information:

Topics of expertise

cognition and AI, automated reasoning and inference, computer vision, constraint processing, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- Sz. Tworkowski, K. Staniszewski, M. Pacek, Y. Wu, H. Michalewski, P. Miłoś, „Focused Transformer: Contrastive Training for Context Scaling", Conference on Neural Information Processing Systems [NeurIPS], December 2023.
- M. Olko, M. Zając, A. Nowak, N. Scherrer, Ł. Kuciński, P. Miłoś, „Trust Your ∇: Gradient-based Intervention Targeting for Causal Discovery", Conference on Neural Information Processing Systems [NeurIPS], December 2023.
- W. Masarczyk, M. Ostaszewski, E. Imani, R. Pascanu, P. Miłoś, T. Trzciński, „The Tunnel Effect: Building Data Representations in Deep Neural Networks", Conference on Neural Information Processing Systems [NeurIPS], December 2023.
- T. Lizurej, T. Michalak, S. Dziembowski, „On Manipulating Weight Predictions in Signed Weighted Networks", AAAI Conference on Artificial Intelligence, February 2023.
- D. Rymarczyk, J. van der Weijer, B. Zieliński, B. Twardowski, „ICICLE: Interpretable Class Incremental Continual Learning", International Conference on Computer Vision [ICCV], October 2023.

Selected projects, funded by the European Commission or national agencies

- Mazovia EDIH, "European Digital Innovation Hub of Mazovia", European Digital Innovation Hubs (grant no. 101083509), 2023-2025.
- "Parallel and exact algorithms for path problems in directed graphs", National Science Centre – SONATA (grant no. UMO-2022/47/D/ST6/02184), 2023-2026.
- ELIAS, "European Lighthouse of AI for Sustainability", HORIZON Research and Innovation Action CL4 (grant no. 101120237), 2023-2027.
- A. Pardyl, G. Rypeść, G. Kurzejamski, B. Zieliński, T. Trzciński, „Active Visual Exploration Based on Attention-Map Entropy", International Joint Conference on Artificial Intelligence (IJCAI), August 2023.

Related study programmes, doctoral or master levels

- Scheme of education at the doctoral schools with IDEAS NCBR.
- Poland


IDEAS

APPLIED ARTIFICIAL INTELLIGENCE LABORATORY

Research node:

Applied Artificial Intelligence laboratory

Directors:

Prof. João L. Vilaça

Year of establishment:

2018

Number of researchers:

11-20

Parent organizations:

Polytechnic Institute of Cávado and Ave (IPCA)

Contact information:

Topics of expertise

Cognition and AI, computer vision, human interfaces intelligent robotics, natural language processing

Selected publications, peer-reviewed

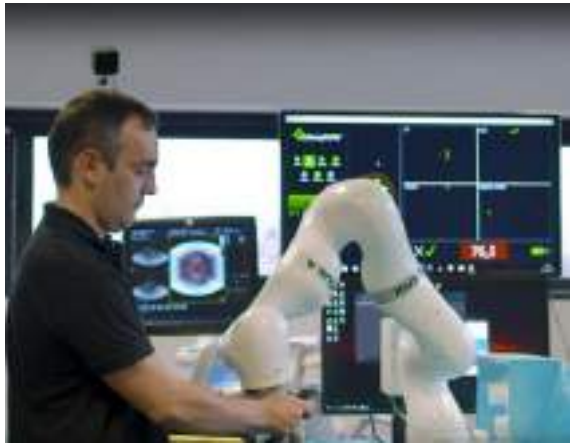
- H.R. Torres, et al. "Anthropometric landmark detection in 3D head surfaces using a deep learning approach", IEEE J. Biomed. Heal. Informatics, 2020
- N.M.C. da Costa, et al., "A multivariate randomized controlled experiment about the effects of mindfulness priming on EEG neurofeedback self-regulation serious games", Applied Sciences, vol. 11, no. 16, pp. 7725, 2021
- P. Morais, et al., "Feasibility and accuracy of automated three-dimensional echocardiographic analysis of left atrial appendage for transcatheter closure", Journal of the American Society of Echocardiography, 2021
- B. Oliveira, P. Morais, F. Veloso, A. Moreira, A. Batista, J. Fonseca, and J.L. Vilaça, "Device and operating method thereof for laser treatment of veins", patent WO/2021/059255
- J.L. Vilaça, P. Rodrigues, J. Correia-Pinto, J. Fonseca, E. Lima E, "Guidance system, method and devices thereof", US 2021/0007774
- J. Gomes-Fonseca, J.L. Vilaça, S. Queirós, E. Lima, and J. Correia-Pinto, "Method and device for generating an uncertainty map for guide percutaneous procedures", provisional patent no- 20211000016659

Selected projects, funded by the European Commission or national agencies

- SmartHealth "Artificial Intelligence for Lifelong Personalized Patient Care", CCDRN (grant no. NORTE-01-0145-FEDER-000045), 2020-2023
- InjectID4.0 "Automatic insertion of RFID systems in the plastic injection process", NORTE (grant no. POCI-01-0247-FEDER-047195), 2020-2023
- OncoNavigator "Intelligent system for personalized navigation and mapping of oncological interventions", CCDRN (grant no. NORTE-01-0145-FEDER-000059), 2020-2023

Related study programmes, doctoral or master levels

- Doctoral Programme in Games and Creative Technologies
- Msc in Applied Artificial Intelligence



2Ai

Research node:
AI Multimedia Lab

Directors:
Prof. Bogdan Ionescu

Year of establishment:
2015

Number of researchers:
11-20

Parent organizations:
Politehnica University of Bucharest

Contact information:

Topics of expertise

Automated reasoning and inference, computer vision, knowledge representation, machine learning

Selected publications, peer-reviewed

- M. Dogariu, L.-D. Ștefan, B.A. Boteanu, C. Lamba, B. Kim, B. Ionescu, "Generation of realistic synthetic financial time-series", ACM Transactions on Multimedia Computing, Communications, and Applications, 2021
- A.-M. Tăuțan, B. Ionescu, E. Santarnecchi, "Artificial intelligence in neurodegenerative diseases: A review of available tools with a focus on machine learning techniques", Elsevier Artificial Intelligence In Medicine, vol. 117, 2021
- M.G. Constantin, L.-D. Ștefan, B. Ionescu, Q.-K.-N. Duong, C.-H. Demarty, M. Sjoberg "Visual interestingness prediction: A benchmark framework and literature review", International Journal of Computer Vision, vol. 129, no. 5, pp. 1526-1550, 2021
- M.G. Constantin, L.-D. Ștefan, B. Ionescu, C.-H. Demarty, M. Sjoberg, M. Schedl, G. Gravier, "Affect in multimedia: Benchmarking violent scenes detection", IEEE Transactions on Affective Computing, 2020
- B. Ionescu, M. Rohm, B. Boteanu, A. Lucian Gînscă, M. Lupu, H. Müller, "Benchmarking image retrieval diversification techniques for social media", IEEE Transactions on Multimedia, 23, pp. 677-691, 2020
- M.G. Constantin, M. Redi, G. Zen, B. Ionescu, "Computational understanding of visual interestingness beyond semantics: Literature survey and analysis of covariates", ACM Computing Surveys, vol. 52, no. 2, 2019

Selected projects, funded by the European Commission or national agencies

- AI4Media "A European Excellence Centre for Media, Society and Democracy", European Commission (H2020, grant no. 951911), 2021-2024
- DeepVisionRomania "Identifying People in Video Streams using Silhouette Biometrics", UEFISCDI (Solutions Axis, grant no-28SOL/2021), 2021-2023
- SPIA-VA "Technologies and Innovative Video Systems for Person Re-Identification and Analysis of Dissimulated Behavior", UEFISCDI (Solutions Axis, grant no. 2SOL/2017), 2017-2020
- UMETECH "University & Media Technology for Cultural Heritage", European Commission (Erasmus+, CBHE, grant no. 574105-EPP-1-2016-1-IT-EPPKA2-CBHE-JP), 2017-2019

Related study programmes, doctoral or master levels

- Doctoral School of Electronics, Telecommunications & Information Technology, Politehnica University of Bucharest






Romanian Institute of Science and Technology

Research node:
AI & Machine Learning

Directors:
Dr. Răzvan V. Florian
Prof. Ruxandra Stoean
Prof. Cătălin Stoean

Year of establishment:
2009

Number of researchers:
1-10

Parent organizations:
Romanian Institute of Science and Technology

Contact information:

Topics of expertise

Image, time series, text, health, media, real estate, cultural heritage

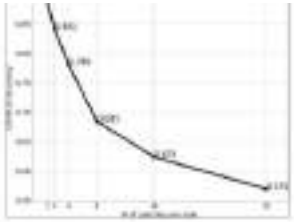
Selected publications, peer-reviewed

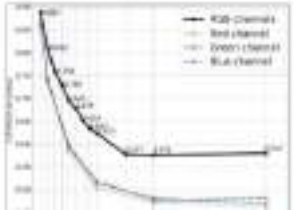
- C. Stoean, et al., “Automated detection of presymptomatic conditions in spinocerebellar ataxia type 2 using Monte Carlo dropout and deep neural network techniques with electrooculogram signals”, Sensors, vol. 20, no. 11, 2020
- C.D. Alecsa, T. Pința, and I. Boros, “New optimization algorithms for neural network training using operator splitting techniques”, Neural Networks, vol. 126, pp. 178-190, 2020
- R.V. Florian, “The chronotron: A neuron that learns to fire temporally precise spike patterns”, PLoS ONE, vol. 7, no. 8, pp. e40233, 2012

Selected projects, funded by the European Commission or national agencies

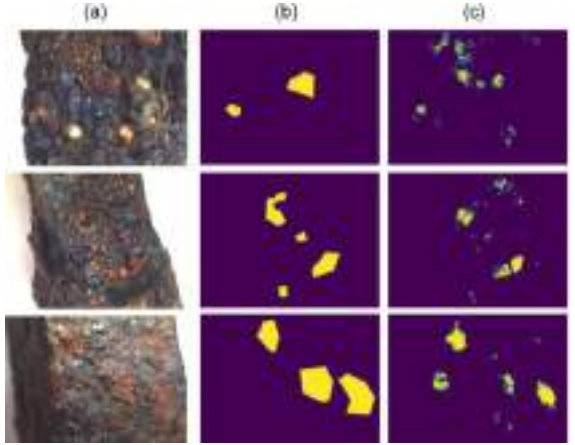
- AutoWare “Automated software development through abstraction in deep, distributed computational models”, European Regional Development Fund (grant no. P_37_679) 2016 – 2021
- DeepRiemann “Riemannian optimization methods for deep learning”, European Regional Development Fund (grant no. P_37_714), 2016 – 2021

Related study programmes, doctoral or master levels






Transylvanian
Machine Learning
Summer School


(a)
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THE INSTITUTE FOR ARTIFICIAL INTELLIGENCE RESEARCH AND DEVELOPMENT OF SERBIA

Research node:

The Institute for Artificial Intelligence Research & Development of Serbia

Directors:

Dr. Dubravko Ćulibrk

Year of establishment:

2021

Number of researchers:

21-50

Parent organizations:

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, computer vision, cognition and AI, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing planning and action

Selected publications, peer-reviewed

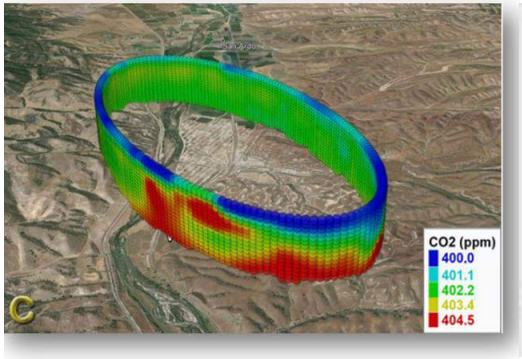
- D. Mišković, L. Milić, A. Čilag, T. Berisavljević, A. Gottscheber, M. Raković, "Implementation of robots integration in scaled laboratory environment for factory automation", Applied Sciences, 2022
- D. Kim, M. W. Alber, Maximilian, Kwok, J. Mitrović, C. Ramirez-Atencia, J. A. RodrÍguez Pérez, H. Zille, "Clarifying assumptions about artificial intelligence before revolutionising patent law", GRUR International, 2022
- M. Pavlović, S. Ilić, N. Antonić, D. Ćulibrk, Monitoring the Impact of Large Transport Infrastructure on Land Use and Environment Using Deep Learning and Satellite Imagery, Remote Sensing, 2022
- O. Kundačina, M. Ćosović, D. Vukobratović, State Estimation in Electric Power Systems Leveraging Graph Neural Networks, International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), 2022
- V. Ilić, L. Bajčetić, S.Petrović, A. Španović, "SCyDia - OCR for Serbian Cyrillic with Diacritics", XX EURALEX International Congress, Mannheim, Germany, 2022

Selected projects, funded by the European Commission or national agencies

- ISIOP - Intelligent sales, inventory and operations planning, European Commission, AIPlan4EU (Grant Agreement no 101016442)

Related study programmes, doctoral or master levels

- Artificial Intelligence and Machine Learning, Master Academic Studies, Faculty of Technical Sciences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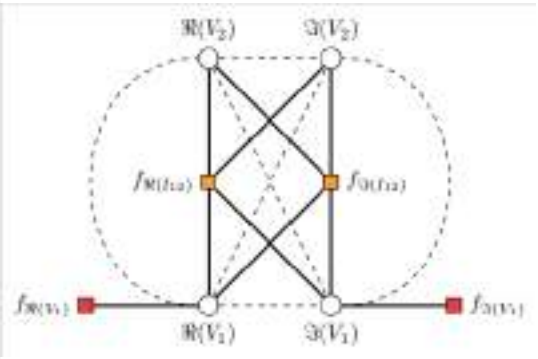
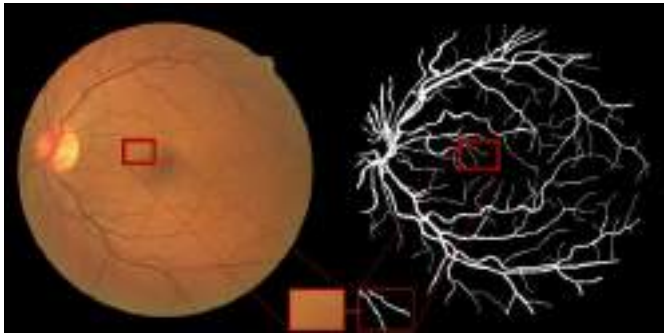




KKUI
Katedra kybernetiky a umelej inteligencie

Research node:
Department of Cybernetics and Artificial Intelligence

Directors:
Prof. Peter Sinčák
Prof. Ján Paralič
Assoc. Prof. Marek Bundzel

Year of establishment:
1989

Number of researchers:
21-50

Parent organizations:
Technical University of Košice

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, intelligent robotics, knowledge representation, machine learning, natural language processing, planning and action

Selected publications, peer-reviewed

- I. Zolotova, P. Papcun, E. Kajáti, M. Miškuf, J. Mocnej, "Smart and cognitive solutions for Operator 4.0: Laboratory H-CPPS case studies", Computers & Industrial Engineering, vol. 139, 2020
- V. Maslej-Krešňáková, M. Sarnovský, P. Butka, K. Machová, "Comparison of deep learning models and various text pre-processing techniques for the toxic comment classification", Applied Sciences, vol. 10, no. 23, 2020
- M. Bundzel, M. Jaščur, M. Kováč, T. Lieskovský, P. Sinčák, T. Tkáčik, "Semantic segmentation of airborne LiDAR data in Maya archaeology", Remote Sensing, vol. 12, no. 22, pp. 3685-3707, 2020
- M. Szabóová, M. Sarnovský, V. Maslej-Krešňáková, K. Machová, "Emotion analysis in human-robot interaction", Electronics, vol. 9, no. 11, pp. 1761-1792, 2020
- J. Magyar, M. Kobayashi, S. Nishio, P. Sinčák, H. Ishiguro, "Autonomous robotic dialogue system with reinforcement learning for elderlies with dementia", 2019 IEEE SMC, pp. 3416-3421, 2019
- P. Sabol, P. Sinčák, J. Magyar, P. Hartono, "Semantically explainable fuzzy classifier", International Journal of Pattern Recognition and Artificial Intelligence, vol. 33, no. 12, 2019

Selected projects, funded by the European Commission or national agencies

- LIFEBOTS "LIFEBOTS Exchange", European Commission (grant no. 824047), 2019-2023
- PARQ "Sudden cardiac arrest prediction and resuscitation network: Improving the quality of care", European Commission (grant no. CA19137), 2020-2024
- ENISaC "Edge-eNabled Intelligent Sensing and Computing", Slovak Research and Development Agency (grant no. APVV-20-0247), 2021-2024
- Alice "The Experiment ALICE at LHC in CERN: Study of strongly interacting matter in extreme conditions", Ministry of Education, Science, Research and Sport of the SR (grant no. 0222/2016), 2016-2020

Related study programmes, doctoral or master levels

- B.Sc., M.Sc. and Ph.D. in Business Informatics, Technical University of Košice
- B.Sc., M.Sc. and Ph.D. in Intelligent Systems, Technical University of Košice






Laboratory of Artificial Intelligence
University of Žilina

Research node:

Laboratory of Artificial Intelligence of the University of Žilina

Directors:

Assoc. prof. Michal Gregor
Prof. Luboš Buzna
Prof. Róbert Hudec

Year of establishment:

2019

Number of researchers:

21-50

Parent organizations:

University of Žilina

Contact information:

Topics of expertise

Computer vision, heuristic search, knowledge representation, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

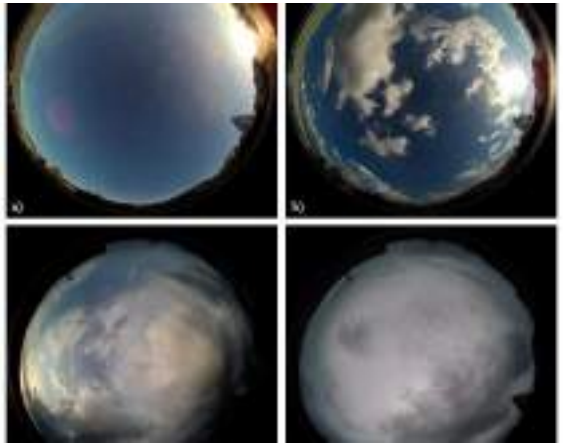
- M. Ondrašovič, P. Tarábek, "Homography ranking based on multiple groups of point correspondences", Sensors, vol. 21, no. 17, 2021
- M. Frniak, M. Markovic, P. Kamencay., J. Dubovan, M. Benco, M. Dado, "Vehicle classification based on fbg sensor arrays using neural networks", Sensors, vol. 20, no. 16, 2020
- M. Klimo, P. Lukáč, P. Tarábek, "Deep neural networks classification via binary error-detecting output codes", Applied Sciences, vol. 11, no. 8, 2021
- M. Straka, R. Carvalho, G. Van Der Poel, L. Buzna, "Analysis of energy consumption at slow charging infrastructure for electric vehicles", IEEE Access, vol. 9, pp. 53885-53901, 2021
- E. R. Nascimento, et al., "On the development of an acoustic-driven method to improve driver's comfort based on deep reinforcement learning", IEEE Transactions on Intelligent Transportation Systems, vol. 22, no. 5, pp. 2923-2932, 2020
-

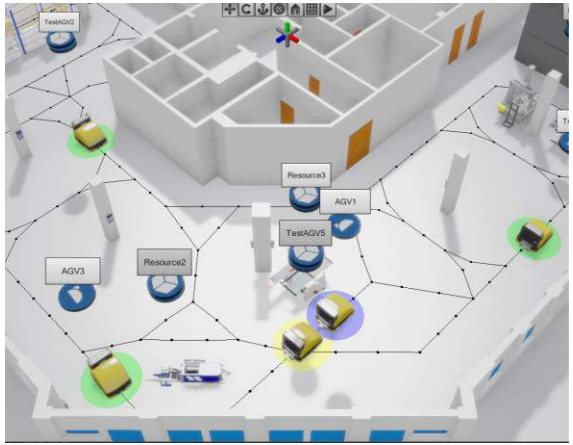
Selected projects, funded by the European Commission or national agencies

- "Innovative prediction methods for optimization of public service systems", VEGA (grant no. 1/0077/22), 2022-2024
- "Hybrid education in the area of artificial intelligence, machine learning and cybernetics at UNIZA", Ministry of Education, Science, Research and Sport of the Slovak Republic, 2020-2022
- "Integrated Teaching for Artificial Intelligence Methods at the University of Žilina", KEGA (grant no. 008ŽU-4/2021), 2021-2023
- SENSIBLE "SENSors and Intelligence in BuLt Environment", MSCA-RISE-2016: Research and Innovation Staff Exchange (grant no. 6260922), 2017-2021

Related study programmes, doctoral or master levels

- Intelligent Information Systems, University of Žilina
- Process Control, University of Žilina




TestAGV2
Resource3
AGV1
TestAGV5
AGV3
Resource2

Research node:
Kempelen Institute of Intelligent Technologies

Directors:
Dr. Maria Bielikova
Dr. Marian Simko
Dr. Michal Kompan

Year of establishment:
2020

Number of researchers:
21-50

Parent organizations:

Contact information:

Topics of expertise

Ethical AI, heuristic search, knowledge representation, machine learning, natural language processing, reasoning under uncertainty,

Selected publications, peer-reviewed

- M. Kanovský, J. Halamová, B. Strnádelová, R. Moro, M. Bielikova, "Pupil size variation in primary facial expressions–testing potential biomarker of self-criticism", Artificial Intelligence Review, vol 55, 2022
- M. Pikuliak, M. Šimko, M. Bieliková, "Cross-lingual learning for text processing: A survey", Expert Systems with Applications, vol 165, 2021
- M. Tomlein, et al., "An Audit of Misinformation Filter Bubbles on YouTube: Bubble Bursting and Recent Behavior Changes", ACM Conference on Recommender Systems, 2021
- I. Srba, M. Savic, M. Bielikova, M. Ivanovic, C. Pautasso, "Employing community question answering for online discussions in university courses: Students' perspective", Computers & Education, vol 135, pp. 75-90, 2019
- M. Kloska, V. Rozinajova, "Towards Symbolic Time Series Representation Improved by Kernel Density Estimators", Transactions on Large-Scale Data- and Knowledge-Centered Systems, vol 12930, pp. 25-45, 2021
- T. Chovanak, O. Kassak, M. Kompan, M. Bielikova, "Fast Streaming Behavioural Pattern Mining", New Generation Computing, vol 36, pp. 365–391, 2018

Selected projects, funded by the European Commission or national agencies

- CEDMO, „Central European Digital Media Observatory" CEF-TC-2020-2 (European Digital Media Observatory), GA No. 2020-EU-IA-0267, 2021-2024
- vera.ai, „VERification Assisted by Artificial Intelligence", Horizon-CL14-2021-HUMAN-01-27, RIA-101070093, 2022-2025
- AI4EUROPE, „An AI on-demand Platform to Support Research Excellence in Europe", Horizon-CL4-2021-HUMAN-01, CSA-101070000, 2022-2025
- Vigilant, „Vital IntelliGence to Investigate ILlegAl DisiNformaTion", Horizon-CL3-2021-FCT-01-03, IA-101073921, 2022-2025

Related study programmes, doctoral or master levels

- Advanced topics in AI and NLP, Brno University of Technology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KInIT wants to motivate skilled people from all over the world to build a career in Slovakia, especially in research and knowledge transfer into practice

Research node:
Applied Intelligence Research Group

Directors:
José Manuel Molina López
Jesús García Herrero

Year of establishment:
2003

Number of researchers:
11-20

Parent organizations:
Universidad Carlos III de Madrid

Contact information:

Topics of expertise

Computer vision, intelligent robotics, knowledge representation, machine learning, multi-agent systems, reasoning under uncertainty

Selected publications, peer-reviewed

- D. Amigo, D. Sánchez Pedroche, J. García, J.M. Molina, "Segmentation optimization in trajectory-based ship classification", Journal of Computational Science, 2022 (in press)
- R. Porto, J. M. Molina, A. Berlanga, M. A. Patricio, "Minimum relevant features to obtain explainable systems for predicting cardiovascular disease using the Statlog dataset", Applied Science, vol. 11, no. 3, pp. 1285, 2021
- J. Carbo, M. A. Patricio, J. M. Molina, "Merging plans with incomplete knowledge about actions and goals through an agent-based reputation system", Expert Systems with Applications, vol. 115, pp. 403-411, 2019
- J. Garcia, J.M. Molina, J. Trincado, "Real evaluation for designing sensor fusion in UAV platforms", Information Fusion, vol. 63, pp. 136-152, 2020
- E. Sadjadi, M.B. Menhaj J. García, J.M. Molina, "How effective are smooth compositions for predictive control of TS fuzzy models ", International Journal of Fuzzy Systems, 2019
- W.R. Padilla, J. García, J.M. Molina, "Improving time series forecasting using information fusion in local agricultural markets", Neurocomputing, vol. 452, pp. 355-373, 2021

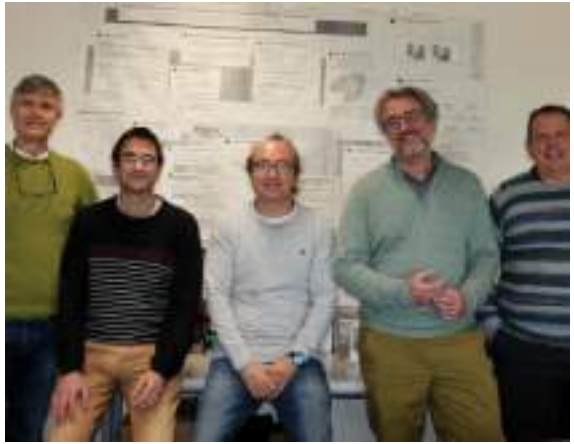
Selected projects, funded by the European Commission or national agencies

- CACTUS"City Aerial vehicle Concepts: Transport, Urbanism and Safety", Spanish National Research Agency (grant no. PID2020-118249RB-C22), 2021-2024
- SIMBAT "Solutions for Intelligent Monitoring based on drone data and AI Tools", Spanish National Research Agency (grant no. PDC2021-121567-C22), 2021-2023
- UTMOST "Unmanned Traffic Management and Operations Support Technologies", Spanish National Research Agency (grant no. TEC2017-88048-C2-2-R), 2018-2020
- GENOBIA "Using AI to design of predictive algorithms for the identification of individuals risk overweight/obesity and their Associated Pathologies", Madrid Government Research Agency (grant no. B2017/BMD-3773), 2018-2022

Related study programmes, doctoral or master levels

- Ph.D and M.Sc. In Ciencia y Tecnología Informática, Universidad Carlos III de Madrid
- M.Sc. In Inteligencia Artificial Aplicada, Universidad Carlos III de Madrid







uc3m

Group of Artificial Intelligence Applications

Research node:

Group of Artificial Intelligence Applications

Directors:

Prof. Pedro A. González-Calero

Prof. Belén Díaz-Agudo

Year of establishment:

2001

Number of researchers:

11-20

Parent organizations:

Complutense University of Madrid

Contact information:

Topics of expertise

Case-based reasoning, human interfaces, knowledge representation, machine learning, planning and action

Selected publications, peer-reviewed

- M. Caro-Martínez, G. Jiménez-Díaz, J. A. Recio-García, "Conceptual modeling of explainable recommender systems: An ontological formalization to guide their design and development", J. Artif. Intell. Res., vol. 71, pp. 557-589, 2021
- J. L. Jorro-Aragoneses, B. Díaz-Agudo, J. A. Recio-García, G. Jiménez-Díaz, "RecoLibry suite: A set of intelligent tools for the development of recommender systems", Autom. Softw. Eng., vol. 27, no. 1, pp. 63-89, 2020
- I. Sagredo-Olivenza, P. P. Gómez-Martín, M. A. Gómez-Martín, P. A. González-Calero, "Trained behavior trees: Programming by demonstration to support AI game designers", IEEE Trans. Games, vol. 11, no. 1, pp. 5-14, 2019
- J. A. Recio-García, P. A. González-Calero, B. Díaz-Agudo, "jcolibri2: A framework for building Case-based reasoning systems", Sci. Comput. Program., vol. 79, pp. 126-145, 2014
- G. Flórez Puga, P. A. González-Calero, G. Jiménez-Díaz, B. Díaz-Agudo, "Supporting sketch-based retrieval from a library of reusable behaviours", Expert Syst. Appl., vol. 40, no. 2, pp. 531-542, 2013

Selected projects, funded by the European Commission or national agencies

- PERXAI "Personalized Explainable Artificial Intelligence from Experiential Knowledge", Ministerio de Economía y Competitividad (grant no. PID2020-114596RB-C21), 2021-2023
- Isee "Intelligent Sharing of explanation experiences by Users for Users", European Commission (Horizon 2020, FET, grant no. PCI2020-120720-2), 2021 - 2024
- SPICE "Social cohesion, Participation and Inclusion through Cultural Engagement", European Commission (H2020, grant no. 870811), 2020-2023
- CBREx "Razonamiento basado en casos para la explicación de sistemas inteligentes", Ministerio de Economía y Competitividad (grant no.TIN2017-87330-R) 2018-2021

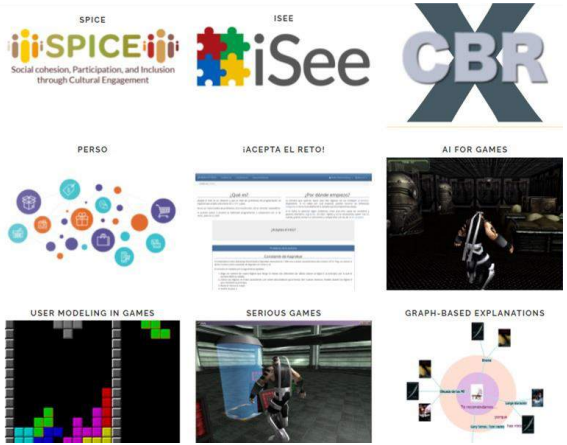
Related study programmes, doctoral or master levels

- Ph.D. in Computer science and engineering, Complutense University of Madrid
- M.Sc. In Game development, Complutense University of Madrid


iSee


PEOPLE IN GAIA


Reunión de Zoom
GAMES
ADAONE
Pedro Gonzalez
Mariana Orihuela
Pablo Gutiérrez
Miriam Leis
Pablo Rodriguez
iPhoneirene
Seguridad
Participantes
Chatear
Compartir pantalla
Grabar
Reacciones


SPICE
SPICE
Social cohesion, Participation, and Inclusion through Cultural Engagement
ISEE
iSee
CBR
PERSO
¡ACEPTA EL RETO!
AI FOR GAMES
USER MODELING IN GAMES
SERIOUS GAMES
GRAPH-BASED EXPLANATIONS

Research node:

Virtual Worlds, Visualization and Artificial Intelligence Research Group

Directors:

Dr. Maite Lopez-Sanchez

Dr. A. Puig, Dr. M. Salamó

Dr. Inmaculada Rodríguez

Year of establishment:

2006

Number of researchers:

1-10

Parent organizations:

University of Barcelona

Contact information:

Topics of expertise

Case-based reasoning, cognition and AI, ethical AI, human interfaces, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- M. Rodríguez-Soto, M. Lopez-Sanchez, J. A. Rodríguez-Aguilar, "Instilling moral value alignment by means of multi-objective reinforcement learning", Ethics and Information Technology Journal, vol. 24, no. 9, pp. 1-17, 2022
- D. Contreras, M. Salamó, L. Boratto, "Integrating collaboration and leadership in conversational group recommender systems", ACM Transactions on Information Systems, vol. 39, no. 4, pp. 1-32, 2021
- D. Tellols, M. Lopez-Sanchez, I. Rodríguez, P. Almajano, A. Puig, "Enhancing sentient embodied conversational agents with machine learning", Pattern Recognition Letters, vol. 129, pp. 317-323, 2020
- A. Puig, I. Rodríguez, J. L. Arcos, J. Rodríguez-Aguilar, S. Cebrián, A. Bogdanovych, N. Morera, A. Palomo, R. Piqué, "Lessons learned from supplementing archaeological museum exhibitions with virtual reality", VR, vol. 24, pp. 343–358, 2020
- T. Zoumpekas, A. Puig, M. Salamó, D. García-Sellés, L. Blanco, M. Guinau, "An intelligent framework for end-to-end rockfall detection", International Journal of Intelligent Systems, pp. 1-32, 2021
- J. Cerquides, M. O. Mülâyim, J. Hernández-González, A. R. Shankar, J. L. Fernandez-Marquez, "A conceptual probabilistic framework for annotation aggregation of citizen science data", Mathematics, vol. 9, no. 8, pp. 875, 2021

Selected projects, funded by the European Commission or national agencies

- Crowd4SDG "Citizen Science for Monitoring Climate Impacts and Achieving Climate Resilience", European Commission (grant no. 872944), 2020-2023
- COREDEM "The Influence of Complex Reward Computation and Working Memory Load onto Decision-Making: A combined theoretical, human and non-human primate approach", European Commission (grant no. 785907), 2020-2023
- Nanomoocs "New audiovisual format with advanced technological functionalities for learning", FEDER program for Catalonia (grant no. COMRDI18-1-0010-02), 2019-2021
- GRAPES "learninG, pRocessing, And oPtimising shapES", European Network (grant no. 860843), 2019-2023

Related study programmes, doctoral or master levels

- Interuniversitary Master on Artificial Intelligence, UPC, UB, URV
- Mathematics and Computer Science and Engineering and Applied Sciences PhD programmes, University of Barcelona


ALFONSO XII

IIIA-CSIC
INSTITUT D'INVESTIGACIÓ EN INTEL·LIGÈNCIA ARTIFICIAL

Research node:

Artificial Intelligence Research Institute (IIIA-CSIC)

Directors:

Prof. Carles Sierra

Prof. Felip Manyà (Deputy)

Year of establishment:

1984

Number of researchers:

21-50

Parent organizations:

Spanish National Research Council (CSIC)

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, commonsense reasoning, ethical AI, heuristic search, human interfaces, machine learning, multi-agent systems, natural language processing, reasoning under uncertainty

Selected publications, peer-reviewed

- J. Giráldez-Cru, J. Levy, "Popularity-similarity random SAT formulas", Artificial Intelligence, vol 299, pp. 103537, 2021
- F. Bistaffa, C. Blum, J. Cerquides, A. Farinelli, J. A. Rodríguez-Aguilar, "A computational approach to quantify the benefits of ridesharing for policy makers and travellers", IEEE Trans. Intell. Transp. Syst., vol. 22, no. 1, pp. 119-130, 2021
- T. P. D. Homem, P. E. Santos, A. H. R. Costa, R. A. da Costa Bianchi, R. L. de Mantaras, "Qualitative case-based reasoning and learning", Artificial Intelligence, vol 283, pp. 103258, 2020
- A. Puig, et al., "Lessons learned from supplementing archaeological museum exhibitions with virtual reality", Virtual Reality, vol 24, no 2, pp. 343-358, 2020
- E. Andrejczuk, F. Bistaffa, C. Blum, J. A. Rodriguez-Aguilar, C. Sierra, "Synergistic team composition: A computational approach to foster diversity in teams", Knowledge-Based Systems, vol 182, pp. 104799, 2019
- L. D'eer, C. Cornelis, L. Godo, "Fuzzy neighborhood operators based on fuzzy coverings", Fuzzy Sets and Systems, vol 312, pp. 17-35. 2017

Selected projects, funded by the European Commission or national agencies

- AI4EU "A European AI On Demand Platform and Ecosystem", European Commission (H2020, grant no. 825619), 2019-2021
- WeNet "The Internet of US", European Commission (H2020, grant no. 823783), 2019-2022
- TAILOR "Foundations of Trustworthy AI-Integrating Reasoning, Learning and Optimization", European Commission (H2020, grant no. 952215), 2020-2023
- CROWD4SDG "Citizen Science for Monitoring Climate Impacts and Achieving Climate Resilience", European Commission (H2020, grant no. 872944), 2020-2023

Related study programmes, doctoral or master levels

- PhD. In Computer Science, Autonomous University of Barcelona
- REDI Programme, RMIT University (Australia)


IIA-CSIC

Universitat Pompeu Fabra Barcelona

Research node:
Artificial Intelligence and Machine Learning group

Directors:
Prof. Anders Jonsson

Year of establishment:
2001

Number of researchers:
21-50

Parent organizations:
Universitat Pompeu Fabra

Contact information:

Topics of expertise

Selected publications, peer-reviewed

- I. D. Rodriguez, B. Bonet, S. Sardiña, H. Geffner, “Flexible FOND planning with explicit fairness assumptions”, International Conference on Automated Planning and Scheduling (ICAPS), pp. 290-298, 2021 (Best paper award)
- J. Bas-Serrano, S. Curi, A. Krause, G. Neu, “Logistic Q-Learning”, International Conference on Artificial Intelligence and Statistics (AISTATS), pp. 3610-3618, 2021
- A. Jonsson, E. Kaufmann, P. Ménard, O. Darwiche-Domingues, E. Leurent, M. Valko, “Planning in MDPs with gap-dependent sample complexity”, Conference on Neural Information Processing Systems (NeurIPS), 2020
- B. Samanta, A. De, G. Jana, V. Gómez, P. K. Chattaraj, N. Ganguly, M. Gomez-Rodriguez, “Nevae: A deep generative model for molecular graphs”, Journal of Machine Learning Research, vol. 21, no. 114, pp. 1-33, 2020
- B. Bonet, G. Frances, H. Geffner, “Learning features and abstract actions for computing generalized plans”, AAAI Conference on Artificial Intelligence (AAAI), pp. 2703-2710, 2019
- N. Cesa-Bianchi, C. Gentile, G. Lugosi, G. Neu, “Boltzmann exploration done right”, Advances in Neural Information Processing Systems (NIPS), vol. 31, pp 6287-6296, 2017

Selected projects, funded by the European Commission or national agencies

- Rleap “From Data-based to Model-based AI: Representation Learning for Planning”, European Commission (ERC Advanced Grant, grant no. 885107, PI Hector Geffner), 2020-2025
- SCALER “Provably Efficient Algorithms for Large-Scale Reinforcement Learning”, European Commission (ERC Starting Grant, grant no. 950180, PI Gergely Neu), 2021-2026
- TAILOR “Foundations of Trustworthy AI-Integrating Reasoning, Learning and Optimization”, European Commission (H2020, grant no. 952215, PI Hector Geffner), 2020-2023
- CLAP “Continual Learning and Planning”, Spanish Ministry of Science and Innovation (grant no. PID2019-108141GB-I00, PI Anders Jonsson), 2020-2024

Related study programmes, doctoral or master levels

- Master in Intelligent Interactive Systems, Universitat Pompeu Fabra
- PhD in Information and Communication Technologies, Universitat Pompeu Fabra

Instituto Universitario de Investigación en Ingeniería de Aragón
Universidad Zaragoza

Research node:
Artificial Intelligence Lab

Directors:
Prof. Alfonso Ortega
Prof. Josechu Guerrero
Prof. Elías Cueto

Year of establishment:
2021

Number of researchers:
51-100

Parent organizations:
University of Zaragoza

Contact information:



Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, human interfaces, intelligent robotics, machine learning, natural language processing

Selected publications, peer-reviewed

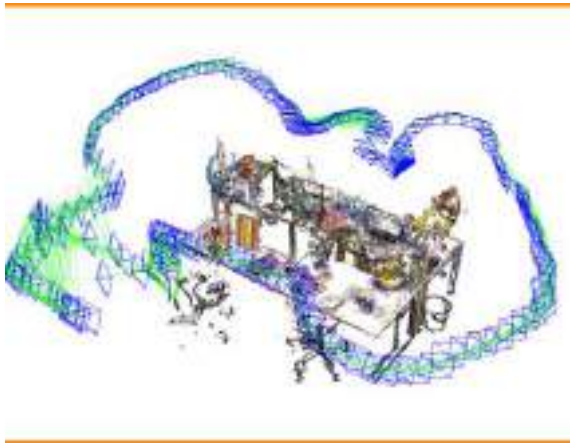
- V. Mingote, A. Miguel, A. Ortega, E. Lleida, "Optimization of the area under the roc curve using neural network supervectors for text-dependent speaker verification", Computer Speech & Language, vol. 63, pp. 101078, 2020
- R. Mur-Artal, J. M. M. Montiel, J. D. Tardos, "ORB-SLAM: A versatile and accurate monocular SLAM system", IEEE Transactions on Robotics, vol. 31, no. 5, pp. 1147-1163, 2015
- R. Mur-Artal, J. D. Tardós, "Orb-slam2: An open-source slam system for monocular, stereo, and rgb-d cameras", IEEE Transactions on Robotics, vol. 33, no. 5, pp. 1255-1262, 2017
- Q. Hernández, A. Badías, D. González, F. Chinesta, E. Cueto, "Structure-preserving neural networks", Journal of Computational Physics, vol. 426, pp. 109950, 2021
- A. C. Murillo, J. J. Guerrero, C. Sagues, "Surf features for efficient robot localization with omnidirectional images", IEEE International Conference on Robotics and Automation, pp. 3901-3907, 2007
- M. Aguilera, M. G. Bedia, X. E. Barandiaran, "Extended neural metastability in an embodied model of sensorimotor coupling", Frontiers in systems neuroscience, vol. 76, 2016

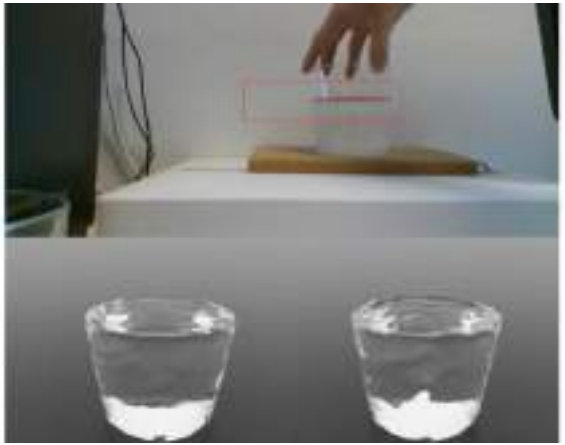
Selected projects, funded by the European Commission or national agencies

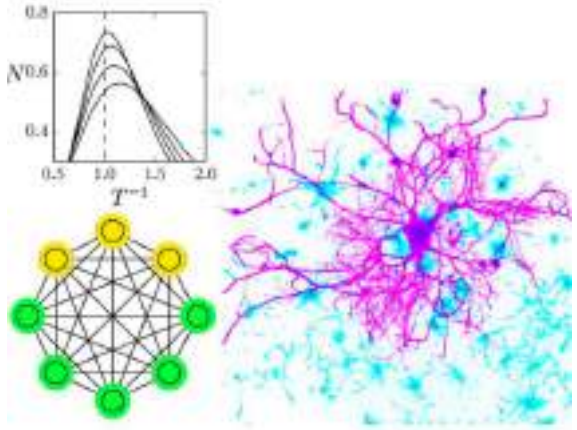
- Endomapper "Real-time mapping from endoscopic video", European Commission (H2020, grant no. 863146)
- TRAFAIR "Understanding traffic flows to improve air quality", INEA (grant no. INEA/CEF/ICT/A2017/1566782)
- ESPERANTO "Exchanges for SPEech ReseArch aNd TechnOlogies", European Commission (Marie Skłodowska-Curie, grant no. 101007666), 2021-2024
- SMiLE "Scientific Machine Learning for computational engineering", Spanish Ministry of Science, 2022-2024

Related study programmes, doctoral or master levels

- Ph.D. Program. on Systems Engineering and Informatics, Universidad de Zaragoza
- M. Sc. on Robotics, graphics and computer vision, Universidad de Zaragoza



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Research node:

Intelligent Data Science and Artificial Intelligence Research Center

Directors:

Full Prof. Karina Gibert

Year of establishment:

2017

Number of researchers:

51-100

Parent organizations:

Universitat Politècnica de Catalunya - BarcelonaTech

Contact information:

Topics of expertise

Cognition and AI, Automated reasoning and inference, case-based reasoning, computer vision, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multiagent systems, natural language processing, planing and action and reasoning under uncertainty

Selected publications, peer-reviewed

- Hosseininejad, S. E.; Rouhi, K.; Neshat, M.; Faraji-Dana, R.; Albert Cabellos-Aparicio; S. Abadal; Alarcon, E. Reprogrammable graphene-based metasurface mirror with adaptive focal point for THz imaging. Scientific reports, 2019, vol. 9, no 1, p. 1-9. DOI: 10.1038/s41598-019-39266-3
- Pont-Tuset, J., Arbelaez, P., Barron, J. T., Marques, F., & Malik, J. (2016). Multiscale combinatorial grouping for image segmentation and object proposal generation. *IEEE transactions on pattern analysis and machine intelligence*, *39*(1), 128-140. DOI: 10.1109/TPAMI.2016.2537320
- Gibert, K., Horsburgh, J. S., Athanasiadis, I. N., & Holmes, G. (2018). Environmental data science. Environmental Modelling & Software, 106, 4-12. DOI: 10.1016/j.envsoft.2018.04.005
- Vellido, A. (2020). The importance of interpretability and visualization in machine learning for applications in medicine and health care. Neural computing and applications, 32(24), 18069-18083. DOI: 10.1007/s00521-019-04051-w
- AGUILAR, Wilbert G.; ANGULO, C. Real-time video stabilization without phantom movements for micro aerial vehicles. EURASIP Journal on Image and Video Processing, 2014, vol. 2014, no 1, p. 1-13. DOI: 10.1186/1687-5281-2014-46
- PADRÓ, Lluís; STANILOVSKY, Evgeny. Freeling 3.0: Towards wider multilinguality. En LREC2012. 2012. https://upcommons.upc.edu/handle/2117/15986

Selected projects, funded by the European Commission or national agencies

- GAVIUS: From reactive to proactive public administrations (GAVIUS) EC, UIA04-095 Set 2019- Set 2023 Total Budget: 5,345,091.55€; IP: Isabel Arnet, Gavà City Council Partners: (Mataró City Council, IDEAI-UPC, Xnet, AOC, GFI, E&Y, CIMNE)
- StairwAI:Stairway to AI: Ease the Engagement of Low-Tech users to the AI-on-Demand platform through AI. EC, H2020-101017142-StairwAI 2021-01-01 2023-12-31
- WHALES: Detectability of humpback and gray whales in satellite imagery off California. The Nature Conservancy WIMMSO-DCL-CALIFORNIA. 01/08/2021- 31/01/2023.
- AI$Music FEstival. EC S+T+Arts- feb 2021-oct 2021

Related study programmes, doctoral or master levels

- PhD Program on Artificial Intelligence, Universitat Politècnica de Catalunya - BarcelonaTech
- Master on Artificial intelligence, Universitat Politècnica de Catalunya - BarcelonaTech

Research Group in Artificial Intelligence
Universitat Rovira i Virgili

Research node:
Research Group in Artificial Intelligence

Directors:
David Riaño

Year of establishment:
1998

Number of researchers:
1-10

Parent organizations:
Universitat Rovira i Virgili

Contact information:

Topics of expertise

Knowledge representation, machine learning

Selected publications, peer-reviewed

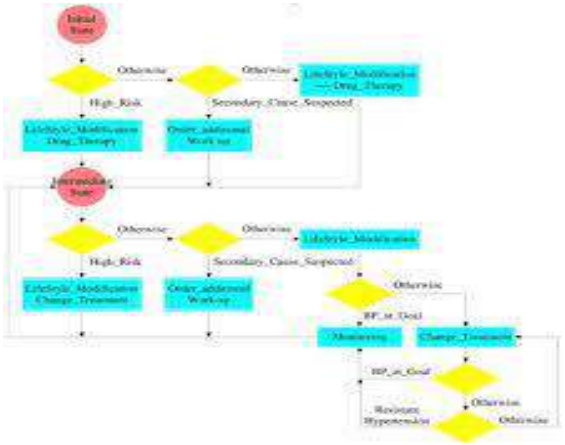
- M. Sayed, D. Riaño, J. Villar, "Novel criteria to classify ARDS severity using a machine learning approach", Critical Care, vol. 25, no. 1, pp. 1-9, 2021
- M. Sayed, D. Riaño, J. Villar, "Predicting Duration of Mechanical Ventilation in Acute Respiratory Distress Syndrome Using Supervised Machine Learning", Journal of Clinical Medicine, vol. 10, no. 17, pp. 3824, 2021
- D. Cuadrado, D. Riaño, J. Gómez, A. Rodríguez, M. Bodí, "Methods and measures to quantify ICU patient heterogeneity", J. Biomed. Informatics, vol. 117, pp. 103768, 2021
- D. Riaño, M. Peleg, A. ten Teije, "Ten years of knowledge representation for health care (2009-2018): Topics, trends, and challenges", Artif. Intell. Medicine, vol. 100, 2019
- A. Kamisalic, D. Riaño, S. Kert, T. Welzer, L.N. Zlatolas, "Multi-level medical knowledge formalization to support medical practice for chronic diseases", Data Knowl. Eng., vol. 119, pp. 36-57, 2019
- D. Riaño, F. Real, J.R. Alonso, "Improving resident's skills in the management of circulatory shock with a knowledge-based e-learning tool", Int. J. Medical Informatics, vol. 113, pp. 49-55, 2018

Selected projects, funded by the European Commission or national agencies

- "Robust radiomic features with clinical data modelling characterizing common cancers aggressiveness and prognosis through computer analysis of multimodal radiological image", (grant no. PID2019-105789RB-I00), 2020-2023
- "Tratamiento personalizado del cáncer de mama por determinación del subtipo molecular y modelado de la recaída mediante procesamiento computacional de imágenes digitales", (grant no. DPI2016-77415-R), 2016-2020
- K4CARE "Knowledge-based homecare eServices for an ageing Europe", European Commission (grant no. 026968), 2006-2009
- HYGIA "Diseño y Aplicación de Nuevas Técnicas de IA para la adquisición y uso de conocimiento médico representado en Patrones Asistenciales", Spanish Ministry of Technology (grant no. TIN2006-15453-c04), 2006-2009

Related study programmes, doctoral or master levels

- Master in Artificial Intelligence, UPC, URV, UB
- Ph.D. in Computer Science and Mathematics of Security, Universitat Rovira i Vigili




2022 Research Group on Artificial Intelligence
(The Banzai Team)
万歲
David Riaño
Director
Aida Kamišalić
Collaborator
Josep Gonzalo
PhD Student
David Cuadrado
PhD Student
Susana Prado
Member
Mohammed Sayed
PhD Student
Josep Ramon Alonso
Collaborator


Springer "Knowledge Representation for Health Care" Series Co-Editions

Research node:
COMPUTATIONAL INTELLIGENCE GROUP

Directors:
PROF. PEDRO LARRAÑAGA
PROF. CONCHA BIELZA

Year of establishment:
2008

Number of researchers:
11-20

Parent organizations:
Universidad Politécnica de Madrid (UPM)

Technical University of Madrid

Contact information:

Topics of expertise

Automated reasoning and inference, heuristic search, machine learning, and reasoning under uncertainty

Selected publications, peer-reviewed

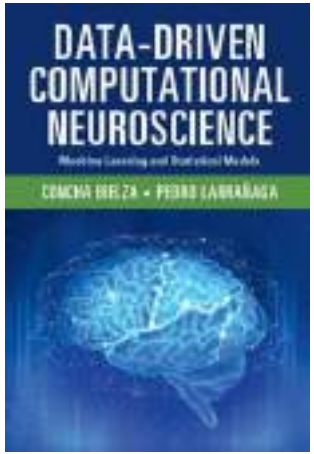
- C. Puerto-Santana, P. Larrañaga and C. Bielza, "Autoregressive asymmetric linear Gaussian hidden Markov models," *IEEE Transactions on Pattern Analysis & Machine Intelligence*, vol. 44, pp. 4642-4658, 2022. doi: 10.1109/TPAMI.2021.3068799
- D. Atienza, C. Bielza and P. Larrañaga, "Semiparametric Bayesian networks," *Information Sciences*, vol. 584, pp. 564-582, 2022. https://doi.org/10.1016/j.ins.2021.10.074
- P. Larrañaga, D. Atienza, J. Diaz-Rojo, C. Puerto-Santana, A. Ogbechie and C. Bielza, *Industrial Applications of Machine Learning*. CRC Press, 2019.
- B. Mihaljevic, C. Bielza and P. Larrañaga, "Bayesian networks for interpretable machine learning and optimization," *Neurocomputing*, vol. 456, pp. 648-665, 2021. https://doi.org/10.1016/j.neucom.2021.01.138
- C. Bielza and P. Larrañaga, "Discrete Bayesian network classifiers: A survey," ACM Computing Surveys, vol. 47, issue 1, Article no. 1, pp. 1-43, 2014. https://doi.org/10.1145/2576868
- V.P. Soloviev, C. Bielza and P. Larrañaga, "Quantum approximate optimization algorithm for Bayesian network structure learning," *Quantum Information Processing,* vol. 22, Article no. 19, 2023. https://doi.org/10.1007/s11128-022-03769-2

Selected projects, funded by the European Commission or national agencies

- BAYES-INTERPRET "Bayesian Networks for Interpretable Machine Learning and Optimization", Spanish Ministry of Science and Innovation. TED2021-1313-B-I00. 2022-2024.
- BAYESTREAMS "Bayesian Networks for Data Streams", Spanish Ministry of Science, Innovation and Universities. PID2019-109247GB-I00. 2020-2023.
- "Human Brain Project". FET Flagship of the European Commission. Participation in Preparatory Action, Rump Up Phase, SGA1, SGA2, SGA3. 2011-2023
- DSTREAMS "Research and Development of Methodology in Artificial Intelligence Oriented to Industrial Use Cases of Ultra-High Speed Continuous Data", Spanish Ministry of Science and Innovation, 2020-2023

Related study programmes, doctoral or master levels

- Ph.D. in Artificial intelligence, Universidad Politécnica de Madrid
- M.Sc. in Artificial intelligence, Universidad Politécnica de Madrid


DATA-DRIVEN
COMPUTATIONAL
NEUROSCIENCE


MADRID-UPM
15th Machine
Learning and
Advanced
Statistics
Summer School
(formerly ASDM)
2023

Institut de Robòtica i Informàtica Industrial

Research node:

Perception and Manipulation Group at Institut de Robòtica I Informàtica Industrial

Directors:

Prof. Carme Torras

Dr. Guillem Alenyà

Year of establishment:

1995

Number of researchers:

21-50

Parent organizations:

Spanish National Research Council (CSIC)

Universitat Politècnica de Catalunya (UPC)

Contact information:

Topics of expertise

cognition and AI, computer vision, constraint processing, ethical AI, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, planning and action, and reasoning under uncertainty

Selected publications, peer-reviewed

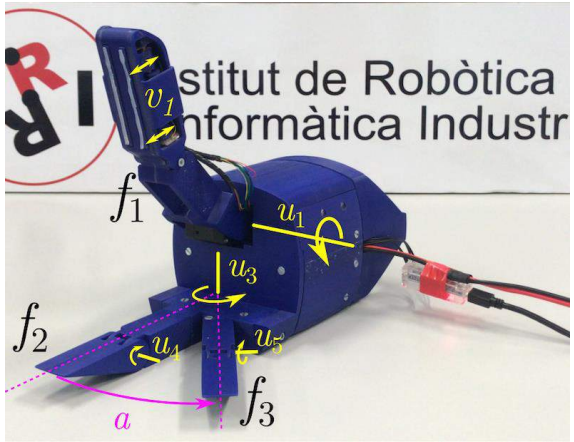
- A. Andriella, C. Torras, C. Abdelnour and G. Alenyà. "Introducing CARESSER: A framework for in situ learning robot social assistance from expert knowledge and demonstrations." *User Modeling and User-Adapted Interaction*, 33: 441-496, 2023
- J. Borràs, A. Boix, S. Foix and C. Torras. "A virtual reality framework for fast dataset creation applied to cloth manipulation with automatic semantic labelling," *IEEE Intl. Conference on Robotics and Automation (ICRA)*, 2023, London, pp. 11605-11611
- E. Caldarelli, A. Colomé and C. Torras, "Perturbation-Based Stiffness Inference in Variable Impedance Control," in *IEEE Robotics and Automation Letters*, vol. 7, no. 4, pp. 8823-8830, Oct. 2022
- A. Olivares-Alarcos, S. Foix, S. Borgo and G. Alenyà. "OCRA – An ontology for collaborative robotics and adaptation" *Computers in Industry*, vol. 132, pp. 103627, June 2022
- X. Xu, H. Chen, F. Moreno-Noguer, L. Jeni and F. De la Torre. "3D human pose, shape and texture from low-resolution images and videos," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 44, no. 9, pp. 4490-4504, Sept. 2022
- J. Borràs, G. Alenyà and C. Torras. "A grasping-centered analysis for cloth manipulation," *IEEE Transactions on Robotics*, 36(3): 924-936, 2020

Selected projects, funded by the European Commission or national agencies

- CLOTHILDE "Cloth manipulation learning from demonstration", ERC Advanced Grant, ERC-2016-ADG-741930, 2018-2023
- TRAIL "TRAnsparent InterpretabLe robots", MSCA DN, European Commission (grant no. 101072488), 2023-2027
- SoftEnable "Towards Soft Fixture-Based Manipulation Primitives Enabling Safe Robotic Manipulation in Hazardous Healthcare and Food Handling Applications", European Commission (grant no. 101070600), 2022-2026
- COHERENT "Collaborative hierarchical robotic explanations", European CHIST-ERA 2019, PCI2020-120718-2, 2021-2024

Related study programmes, doctoral or master levels

- PhD in Automatic Control, Robotics and Vision, Universitat Politècnica de Catalunya
- Master's degree in Automatic Control and Robotics, Universitat Politècnica de Catalunya


stitut de Robòtica
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Research node:

ELLIS Unit Alicante Foundation, aka “Institute of Humanity-centric AI”

Directors:

Dr. Nuria Oliver

Year of establishment:

2020

Number of researchers:

1-10

Parent organizations:

No parent organization. It is an independent research foundation.

https://ellisalicante.org
info@ellisalicante.org

Contact information:

Topics of expertise

Human-centric AI; AI for Social Good; algorithmic fairness; explainable AI; social impact of AI; privacy in AI;

Selected publications, peer-reviewed

- Lepri, B., **Oliver, N.**, & Pentland, A. (2021). Ethical machines: The human-centric use of artificial intelligence. *iScience , 24(3),* 102249.
- Lozano, M.A., Garibo, O., Piñol, E., Rebollo, M., Polotskaya, K., Garcia-March, M. A., Conejero, J. A., Escolano, F., & **Oliver, N.** (2021). Open Data Science to fight COVID-19: Winning the 500k XPRIZE Pandemic Response Challenge. *Joint European Conference on Machine Learning and Knowledge Discovery in Databases* 384-399. **Best paper award in Applied Data Science**
- **Riccio, P.**, Psomas, B., Galati, F., Escolano, F., Hofmann, T., & **Oliver, N.** (2022). OpenFilter: A Framework to Democratize Research Access to Social Media AR Filters. *36th Conference on Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks Track*
- Martínez-García, M., Sansano-Sansano, E., Castillo-Hornero, A., Femenia, R., Roomp, K., & **Oliver, N.** (2022). Social Isolation during the COVID-19 Pandemic in Spain: A Population Study. *Nature Scientific Reports , 12(1),* 1-15. **Top 8% of the research outputs (Altmetric)**
- **Colin, J.**, Fel, T., Cadène, R., & Serre, T. (2022). What I Cannot Predict, I Do Not Understand: A Human-Centered Evaluation Framework for Explainability Methods. *36th Conference on Neural Information Processing Systems (NeurIPS)* 2022
- **Németh, G. D.**, Lozano, M. A., Quadrianto, N., & **Oliver, N.** (2022). A Snapshot of the Frontiers of Client Selection in Federated Learning. *Transactions on Machine Learning Research, Jan 2022*

Selected projects, funded by the European Commission or national agencies

- ELIAS, https://elias-ai.eu/, European Commission under Horizon Europe Programme, grant number 101120237, 2023-2027
- Nominal grant received by the Regional Government of Valencia, Spain (Convenio Singular signed with Generalitat Valenciana, Conselleria de Innovacion, Industria, Comercio y Turismo, Dirección General de Innovacion) years 2021-2024

Related study programmes, doctoral or master levels

- We are an independent research foundation that does not grant degrees. Our ELLIS PhD students are affiliated with the University of Alicante in Spain


elis


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ALICANTE

UMEÅ UNIVERSITY

Research node:
Responsible AI Group

Directors:
Prof. Virginia Dignum
Dr. J. Nieves, Dr. A. Aler Tubella
Dr. L. Vanhée, Dr. A. Theodorou

Year of establishment:
2019

Number of researchers:
11-20

Parent organizations:
Umeå University

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, ethical AI, human interfaces, knowledge representation, multi-agent systems, natural language processing, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- R. T. Javed, M. Borit, L. Vanhée, E. Zea, E. Zea, S. Gupta, R. Vinuesa, J. Qadir, "Get out of the BAG! Silos in AI ethics education: Unsupervised topic modeling analysis of global AI curricula", Journal of Artificial Intelligence Research (JAIR), vol. 73, 2022
- M. Winikoff, G. Sidorenko, V. Dignum, F. Dignum, "Why bad coffee?: Explaining BDI agent behaviour with valuings". Artificial Intelligence, vol. 300, 2021
- A. Aler Tubella, A. Theodorou, and J. C. Nieves, "Interrogating the black box: Transparency through information-seeking dialogues." International Conference on Autonomous Agents and MultiAgent Systems (AAMAS), pp. 106–114, 2021
- A. Theodorou, V. Dignum, "Towards ethical and socio-legal governance in AI", Nature Machine Intelligence, vol. 2, no. 1, 2020
- H. Lindgren, T. Kampik, G. Guerrero, J. C. Nieves, "Argumentation-based health information systems: A design methodology", IEEE Intelligent Systems, vol.36, no. 2, pp. 72-80, 2021
- M. Hildebrandt, V. Dignum, "HCI sustaining the rule of law and democracy: A European perspective", 2020

Selected projects, funded by the European Commission or national agencies

- HumanE-AI-Net "HumanE AI Network", European Commission (grant no. 952026), 2020-2023
- WASP-HS "The Wallenberg AI, Autonomous Systems and Software Program-Humanities and Society", Wallenberg Foundation, 2019-2028
- WASP "Wallenberg AI, Autonomous Systems and Software Program", Knut and Alice Wallenberg Foundation, 2015-2030
- AI4EU "A European AI On Demand Platform and Ecosystem", European Commission (grant no. 825619), 2019-2022

Related study programmes, doctoral or master levels

- Doctoral Programme in Computing Science and Computational Science and Engineering, Umeå University
- Master's Programme in Artificial Intelligence, Umeå University


XPRIZE

Zurich University of Applied Sciences

zh aw School of Engineering

CAI Centre for Artificial Intelligence

Research node:

Centre for Artificial Intelligence

Directors:

Prof. Thilo Stadelmann

Prof. Mark Cieliebak

Year of establishment:

2021

Number of researchers:

21-50

Parent organizations:

ZHAW Zurich University of Applied Sciences

Contact information:



Topics of expertise

Cognition and AI, computer vision, ethical AI, human interfaces, intelligent robotics, machine learning, multi-agent systems, natural language processing

Selected publications, peer-reviewed

- J. Deriu, et al., "Leveraging large amounts of weakly supervised data for multi-language sentiment classification." Proceedings of the 26th international conference on world wide web, 2017
- J. Deriu, et al., "Survey on evaluation methods for dialogue systems." Artificial Intelligence Review, vol. 54, no. 1, pp. 755-810, 2021
- B. Meier, et al., "Fully convolutional neural networks for newspaper article segmentation", IEEE International Conference on Document Analysis and Recognition (ICDAR), vol. 1, 2017
- Y. Lukic, et al., "Speaker identification and clustering using convolutional neural networks", IEEE international Workshop on Machine Learning for Signal Processing (MLSP) 2016
- L. Tuggener, et al., "Automated machine learning in practice: state of the art and recent results", IEEE Swiss Conference on Data Science (SDS), 2019
- T. Stadelmann, et al., "Deep learning in the wild", IAPR Workshop on Artificial Neural Networks in Pattern Recognition, Springer, 2018

Selected projects, funded by the European Commission or national agencies

- E2E-SG "End-to-End Low-Resource Speech Translation for Swiss German Dialects", SNF Swiss National Science Foundation (grant no. 200729), 2021-2022
- Virtual Kids "Virtual characters to improve the quality of child interrogations", SNF Swiss National Science Foundation (grant no. 189236), 2020-2023
- AC3T "AI powered CBCT for improved Combination Cancer Therapy", Innosuisse Swiss Innovation Agency (grant no. 56768.1 IP-LS), 2022-2024
- DeepScore "Digital Music Stand with Musical Understanding via Active Sheet Technology", Innosuisse Swiss Innovation Agency (grant no. 17963.1 PFES-ES), 2016-2019

Related study programmes, doctoral or master levels

- Master of Science in Engineering, profile Data Science, Zurich University of Applied Sciences
- PhD Network in Data Science, University of Zurich


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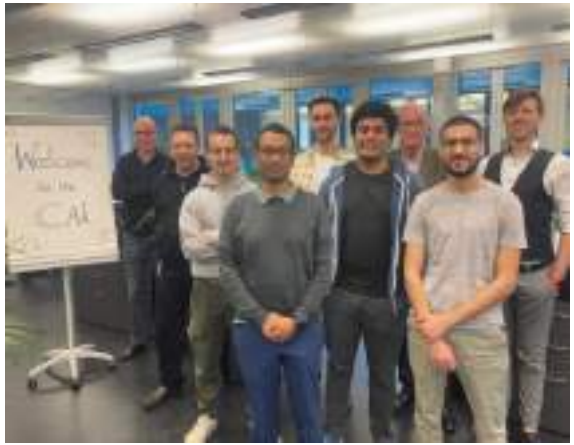


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IDSIA
Dalle Molle Institute for Artificial Intelligence
SUPSI USI

Research node:

IDSIA USI-SUPSI, Dalle Molle institute for Artificial Intelligence

Directors:

Prof Dr Andrea Emilio Rizzoli
Prof Dr Jürgen Schmidhuber
Prof Dr Marco Zaffalon

Year of establishment:

1988

Number of researchers:

101+

Parent organizations:

USI, Università della Svizzera italiana

SUPSI, University of Applied Sciences of Southern Switzerland

Contact information:

Topics of expertise

Automated reasoning and inference, computer vision, ethical AI, heuristic search, intelligent robotics, machine learning, natural language processing, reasoning under uncertainty

Selected publications, peer-reviewed

- M. Zaffalon, E. Miranda, "Axiomatising incomplete preferences through sets of desirable gambles", Journal of Artificial Intelligence Research, vol. 60, pp. 1057-11126, 2017
- J. Byrka, F. Grandoni, D. Kratsch, "Steiner tree approximations via iterative randomized routing", Journal of the ACM, vol. 60, no. 1, pp. 1-33, 2013
- G. Corani, M. Zaffalon, "Learning reliable classifiers from small or incomplete data sets: The naive credal classifier 2", Journal of Machine Learniong Research, vol. 9, pp. 581-621, 2008
- A. Graves, J. Schmidhuber, "Framewise phoneme classification with bidirectional LSTM and other neural network architectures", Neural Networks, vol. 18, no. 5-6, pp. 602-610, 2005
- M. Dorigo, G.A. Di Caro, L.M. Gambardella, "Ant algorithms for discrete optimization", Artificial Life, vol. 5, no. 2, pp. 137-172, 1999
- S. Hochreiter, J. Schmidhuber, "Long short-term memory", Neural Computation, vol. 9, no. 8, pp. 1735-1780, 1997

Selected projects, funded by the European Commission or national agencies

- AlgoRNN "Recurrent Neural Networks and Related Machines That Learn Algorithms", European Commission (ERC, grant no. 742870), 2017-2023
- AlgoRES "Approximation Algorithms for Resource Scheduling", Swiss National Science Foundation (grant no. Div I-III 182865), 2021-2025
- "AI based forecasting models for energy production and price", Innosuisse-Swiss Innovation Agency (grant no. 25586.1 PFES-ES), 2017-2019
- SmartH2O "An ICT Platform to leverage on Social Computing for the efficient management of Water Consumption", European Commission (FP7, grant no. 619172), 2014-2017

Related study programmes, doctoral or master levels

- Master in Artificial Intelligence, Università della Svizzera italiana






Research node:
Robotics and Artificial Intelligence Laboratory

Directors:
Prof. Dr. Aysegul Ucar

Year of establishment:
2017

Number of researchers:
1-10

Parent organizations:
Firat University

Contact information:

Topics of expertise

Computer vision, cognition and AI, intelligent robotics, machine learning, multi-agent systems, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- S. Aslan, R. Ozalp, A. Uçar, C. Guzelis, "New CNN and hybrid CNN-LSTM models for learning object manipulation of humanoid robots from demonstration", Cluster Computing, pp. 1-16, 2021
- S. Aslan, A. Uçar, C. Guzelis, "New convolutional neural network models for efficient object recognition with humanoid robots", Journal of Information and Telecommunication, vol. 6, no.1, pp. 63-82, 2022
- S. Aslan, B. Tasci, A. Ucar, C. Guzelis, "Learning to Move an Object by the Humanoid Robots by Using Deep Reinforcement Learning", Intelligent Environments, IOS Press, pp. 143-155, 2021

Selected projects, funded by the European Commission or national agencies

- "Development of a new deep learning algorithm for the training of humanoid robots", The Scientific and Technological Research Council of Turkey (Tubitak), (1003, grant no. 117E589), 2017-2020

Related study programmes, doctoral or master levels

- M.Sc. and Ph.D. in Mechatronics Engineering, Firat University

Research node:

CIU, Artificial Intelligence Application and Research Center

Directors:

Prof. Dr. Erbug Celebi

Year of establishment:

2020

Number of researchers:

Parent organizations:

Cyprus International University

Contact information:

Topics of expertise

Selected publications, peer-reviewed

- M. Cagatayli, E. Celebi, "Estimating academic success in higher education using big five personality traits, a machine learning approach", Arabian Journal for Science and Engineering, vol. 2, ,2022
- T. Yirtici, K. Yurtkan, "Regional-CNN based enhanced Turkish sign language recognition", Signal, Image and Video Processing, 2022
- A. Milad, K. Yurtkan, "An integrated 3D model based face recognition method using synthesized facial expressions and poses for single image applications", Applied Nanoscience, 2022

Selected projects, funded by the European Commission or national agencies

Related study programmes, doctoral or master levels

- Master on Computer Engineering
- PhD in Computer Engineering

IZMIR DEMOCRACY UNIVERSITY

AIDA

ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS RESEARCH AND APPLICATION CENTER

Research node:

Artificial Intelligence and Data Analytics Research and Application Center

Directors:

Prof. Dr. Devrim Ünay

Prof. Dr. Barış Bozkurt

Year of establishment:

2020

Number of researchers:

11-20

Parent organizations:

Izmir Democracy University

Contact information:

Topics of expertise

Automated reasoning and inference, case-based reasoning, cognition and AI, computer vision, heuristic search, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, planning and action

Selected publications, peer-reviewed

- R. Soyak, E. Navruz, E. O. Ersoy, G. Cruz, C. Prieto, A. P. King, D. Unay, I. Oksuz, "Channel attention networks for robust MR fingerprint matching", IEEE Transactions on Biomedical Imaging, vol. 69, no. 4, pp. 1398-1405, 2022
- C. Demiroglu, et al., "Postprocessing synthetic speech with a complex cepstrum vocoder for spoofing phase-based synthetic speech detectors", in IEEE Journal of Selected Topics in Signal Processing, vol. 11, no. 4, pp. 671-683, 2017
- B Bozkurt, I Germanakis, Y Stylianou, "A study of time-frequency features for CNN-based automatic heart sound classification for pathology detection", Computers in Biology and Medicine, vol. 100, pp. 132-143, 2018
- Y.S. Erdem, O.Y. Ozuysal, D.P. Okvur, B.U. Töreyin, D. Unay, "An image segmentation method for wound healing assay images", Natural and Applied Sciences Journal, vol. 4, no. 1, pp. 30-37, 2021
- M. Lucidi, et al., "SSNOMBACTER: A collection of scattering-type scanning near-field optical microscopy and atomic force microscopy images of bacterial cells", GigaScience, vol. 9, no. 11, pp. 1-12, 2020
- Bogar, Esref, and Selami Beyhan. "Adolescent Identity Search Algorithm (AISA): A novel metaheuristic approach for solving optimization problems." *Applied Soft Computing* 95 (2020): 106503. Doi: 10.1016/j.asoc.2020.106503.

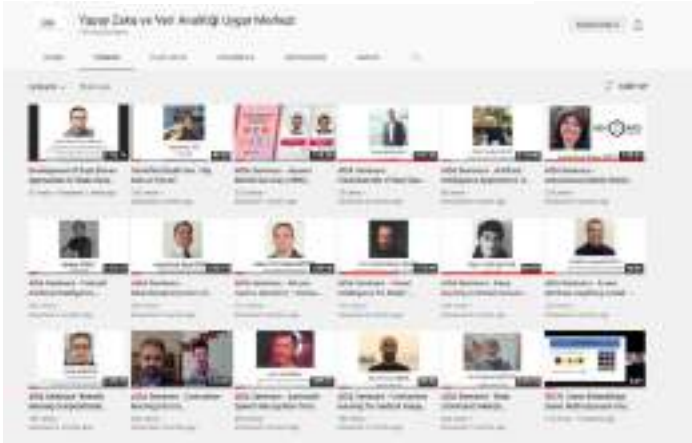
Selected projects, funded by the European Commission or national agencies

- "Development of Image Processing and Machine Learning based Tools for Analysis of Phase-Contrast Optical Microscopy Time Series Images", TÜBİTAK (ARDEB 1001), 2020-2023
- "Automatic Transcription of Turkish music", TÜBİTAK (ARDEB 1001), 2007-2010
- "A new Network of European BioImage Analysts to advance life science imaging (NEUBIAS)", European Commission(EU Cost Action), 2016-2020

Related study programmes, doctoral or master levels

- Ph.D. in Electrical-Electronics Engineering, Izmir Democracy University
- M.Sc. in Electrical-Electronics Engineering, Izmir Democracy University

Youtube AIDA Seminars



Research node:
AI Research Group at AGU

Directors:
Kasim Tasdemir
Bulent Yilmaz
Cagri Gungor

Year of establishment:
2020

Number of researchers:
1-10

Parent organizations:
Abdullah Gul University

Contact information:

Topics of expertise

Automated Reasoning and Inference, computer Vision, machine Learning

Selected publications, peer-reviewed

- Y. Yan, T. Schaffter, T. Bergquist, et al., "A continuously benchmarked and crowdsourced challenge for rapid development and evaluation of models to predict COVID-19 diagnosis and hospitalization". JAMA Netw Open., vol. 4, no. 10, 2021
- Y. Gormez, et al., "A deep learning approach with Bayesian optimization and ensemble classifiers for detecting denial of service attacks", International Journal of Communication Systems, vol. 33, no. 11, pp. e4401, 2020
- F. Uslu, K. Icoz, K. Tasdemir, R. S. Dogan, B. Yilmaz, "Image-analysis based readout method for biochip: Automated quantification of immunomagnetic beads, micropads and patient leukemia cell", Micron, vol. 133, pp. 102863, 2020
- U. Yilmaz, et al.. "Data mining techniques in direct marketing on imbalanced data using Tomek link combined with random under-sampling." International Conference on Information System and Data Mining, pp. 67-73, 2021
- M. Bicakci, O. Ayyildiz, Z. Aydin, A. Basturk., S. Karacavus, B. Yilmaz, "Metabolic imaging based sub-classification of lung cancer" IEEE Access, vol. 8, pp. 218470-218476, 2020
- K. Tasdemir. A. E. Cetin, "Content-based video copy detection based on motion vectors estimated using a lower frame rate". Signal, Image and Video Processing, vol. 8, no. 6, pp. 1049-1057, 2014

Selected projects, funded by the European Commission or national agencies

- "Artificial Intelligence Assisted Prognostic Marker Determination from Colonoscopy and Histopathology Images for Colon Polyps", The Scientific And Technological Research Council Of Turkey (Tubitak-1001), 2021-2023
- "AI Based Traffic Light Signalisation Optimisation", The Scientific And Technological Research Council Of Turkey (TEYDEB-1007), 2021-2023
- "Determination of the weight perception of the object to be lifted in preparation of the bionic hand to the activity by brain signals", The Scientific And Technological Research Council Of Turkey (Tubitak, 1001), 2020-2022
- "Text Classification Using Complete Subgraphs Generated Over N-Grams", The Scientific And Technological Research Council Of Turkey (Tubitak-3501), 2022-2024

Related study programmes, doctoral or master levels

- PhD in Electrical and Computer Engineering, Abdullah Gul University
- MSc in Electrical and Computer Engineering, Abdullah Gul University


AI Research Group at AGÜ

Research node:

Artificial Intelligence Research Group at Bogazici University

Directors:

Prof. L. Akarun, Dr. I. Baytas
Prof. T. Gungor, Dr. A. Ozgur
Dr. S. Uskudarli, Dr. E. Ugur

Year of establishment:

2002

Number of researchers:

21-50

Parent organizations:

Boğaziçi Üniversitesi

Contact information:

Topics of expertise

Cognition and AI, computer vision, human interfaces, intelligent robotics, machine learning, natural language processing

Selected publications, peer-reviewed

- O. Hakime, A. Özgür, E. Ozkirimli. "DeepDTA: Deep drug–target binding affinity prediction" Bioinformatics, vol. 34, no. 17, pp. i821-i829, 2018
- C. R. Aydin, T. Güngör, "Combination of recursive and recurrent neural networks for aspect-based sentiment analysis using inter-aspect relations", IEEE Access, vol. 8, pp. 77820-77832, 2020
- O. Alptekin, L. Akarun, "Neural sign language translation by learning tokenization." IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2020
- I. M. Baytas, C. Xiao, X. Zhang, F. Wang, A. K. Jain, J. Zhou, "Patient subtyping via time-aware LSTM networks." ACM SIGKDD international conference on knowledge discovery and data mining, 2017
- M. Y. Seker, M. Imre, J. Piater, E. Ugur, "Conditional neural movement primitives", Robotics: Science and Systems, vol. 10, 2019
- O. Güngör, T. Güngör, S. Üsküdarli. "The effect of morphology in named entity recognition with sequence tagging", Natural Language Engineering, vol. 25, no. 1, pp. 147-169, 2019

Selected projects, funded by the European Commission or national agencies

- IMAGINE "Robots Understanding Their Actions by Imagining Their Effects", European Commission (grant no. 731761), 2017-2022
- BIOLITCONTEXTMINING "Contextual Text Mining from the Biomedical Scientific Literature", European Commission (grant no. 304153), 2012-2016
- DEEPSYM "Abstract Reasoning and Life-Long Learning via symbol and rule discovery", Scientific and Technological Research Council of Turkey (grant no. 120E274), 2021-2024
- OpenMaker "Harnessing the power of Digital Social Platforms to shake up makers and manufacturing entrepreneurs towards a European Open Manufacturing ecosystem", European Commission (grant no. 687941), 2016-2018

Related study programmes, doctoral or master levels

- M.Sc. and Ph.D. in Computer Science, Bogazici University
- M.A. in Cognitive Science, Bogazici University


QUICK

NEAR EAST UNIVERSITY
AI AND ROBOTICS INSTITUTE

Research node:
NEU AI and Robotics Institude

Directors:
Prof.Dr. İrfan Suat GÜNSEL
Prof.Dr. Mustafa KURT
Prof.Dr. Fadi AL-TURJMAN

Year of establishment:
2020

Number of researchers:
101+

Parent organizations:
NEAR EAST UNIVERSITY

Contact information:
https://air.neu.edu.tr/
ai.iot@neu.edu.tr
Near East University
Near East Boulevard, ZIP: 99138 Nicosia / TRNC
Mersin 10 - TURKEY

Topics of expertise

AI and robotics technologies like deep learning, machine learning, computer vision, graphics, manipulation, locomotion, and control, including the intelligent transportation systems, smart mobile applications, etc.

Selected publications, peer-reviewed

- S. Nataraj, **F. Al-Turjman**, A. Adom, Sitharthan R, and Rajesh M, "Intelligent Robotic Chair with Thought Control and Communication Aid Using Higher Order Spectra Band Features(DOI. 10.1109/JSEN.2020.3020971)", *IEEE Sensors Journal*
- V. Gomathy, K. Janarthanan, **F. Al-Turjman**, R. Sitharthan, M. Rajesh, K. Vengatesan, T. Priya Reshma, "Investigating the Spread of Coronavirus Disease via Edge-AI and Air Pollution Correlation(DOI. 10.1145/3424222)", *ACM Transactions on Internet Technology*, vol. 21, no. 4, pp. 1-10
- D. Deebak, **F. Al-Turjman**, "Digital-Twin Assisted: Fault Diagnosis Using Deep Transfer Learning for Machining Tool Condition (DOI: 10.1002/int.22493)", *Wiley International Journal of Intelligent Systems*
- **F. Al-Turjman**, H. Osuli, "AI for Dynamic Packet Size Optimization of BatteryLess IoT nodes: A case study for Wireless Body Area Sensor Networks(https://doi.org/10.1007/s00521-020-04813-x)", *Neural Computing and Applications*, vol. 32, no. 20, pp. 16167-16178
- R. Gupta, S. Tanwar, P. Italiya, **F. Al-Turjman,** A. Nauman, S. Kim, "Smart Contract Privacy Protection using AI in Cyber-Physical Systems: Tools, Techniques, and Challenges", *IEEE Access*, vol. 8, no. 1, pp. 24746-24772
- **F. Al-Turjman**, L. J. Poncha, S. Alturjman, L. Mostarda, "Enhanced Deployment Strategy for the 5G Drone-BS Using Artificial Intelligence(DOI. 10.1109/ACCESS.2019.2921729)", *IEEE Access,* vol. 7, no. 1, pp. 75999-76008.

Selected projects, funded by the European Commission or national agencies

- "**Intelligent Student Registration System (http://app.neu.edu.tr:7001/#/login) ",** Near East University, project no:8079,2020-2022
- "**Cryptocurrency via Blockchain Interface(https://www.youtube.com/watch?v=k3UVQv7ntIs) ",** Near East University, project no:8078,2020-2022
- "**Virtual Hairstyle** (https://app.neu.edu.tr/HairStyle/) ", Near East University, project no:8077,2019-2021
- "**Artificial Intelligence in Everything** (https://app.neu.edu.tr/AIE22/index.html) ", Near East University, project no:8076,2019-2021

Related study programmes, doctoral or master levels

- M.Sc. Artificial Intelligence, Near East University
- https://muhendislik.neu.edu.tr/academic/academic-programmes/department-of-artificial-intelligence-engineering/?lang=en


5
NEAR EAST UNIVERSITY


ARTIFICIAL INTELLIGENCE IN EVERYTHING
International Conference on Artificial Intelligence in Everything
Lefkosa, Cyprus | August 02-04, 2022 | 9am Cyprus Time


UPLOAD


SpeechToText

THE EMOTIONAL AI LAB

Research node:
The Emotional AL Lab

Directors:
Prof. Andrew McStay
Prof. Vian Bakir

Year of establishment:
2016

Number of researchers:
11-20

Parent organizations:
Bangor University

Contact information:

Topics of expertise
Ethical AI

Selected publications, peer-reviewed

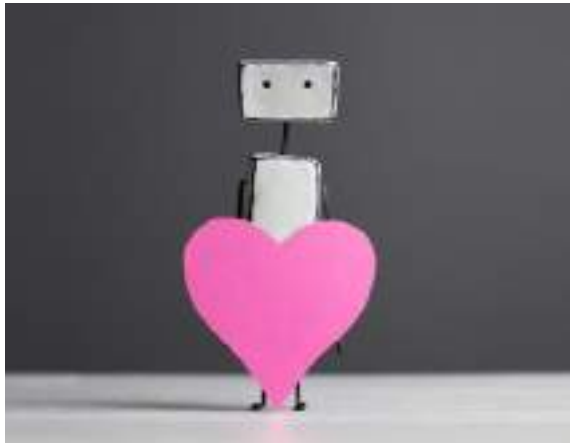
- A. McStay, L. Urquhart, "In cars (are we really safest of all?): Interior sensing and emotional opacity, International Review of Law, Computers & Technology, pp. 1-24, 2022
- A. McStay, "Emotional AI, ethics, and Japanese spice: Contributing community, wholeness, sincerity, and heart", Philos. Technol., vol. 34, pp. 1781–1802, 2021
- A. McStay, G. Rosner, "Emotional artificial intelligence in children's toys and devices: Ethics, governance and practical remedies, Big Data & Society, 2021
- M. T. Ho, P. Mantello, H. K. Nguyen, et al., "Affective computing scholarship and the rise of China: a view from 25 years of bibliometric data", Nature, Humanit. Soc. Sci. Commun., vol. 8, no. 282, 2021
- A. McStay, L. Urquhart, "'This time with feeling?' Assessing EU data governance implications of out of home appraisal based Emotional AI", First Monday, 2019
- V. Bakir, A. McStay, "Fake news & the economy of emotions", Digital Journalism, vol. 6, no. 2, pp. 154-175, 2017

Selected projects, funded by the European Commission or national agencies

- "Taking Back Control of Our Personal Data: An ethical impact assessment of personal data storage apps", Innovate UK (grant no. TS/T019964/1), 2020-2021
- "Emotional AI in Cities: Cross Cultural Lessons from UK and Japan on Designing for An Ethical Life", UKRI-JST (grant no,. ES/T00696X/1), 2019-2023
- "Rights of Childhood: Affective Computing and Data Protection", EPSRC/HDI+ (grant no. EP/R045178/1), 2019-2020
- "Emotional AI: Comparative Considerations for UK and Japan across Commercial, Political and Security Sectors", ESRC-AHRC UK-Japan SSH Connections (grant no. ES/S013008/1), 2018-2019

Related study programmes, doctoral or master levels

- Politics, Ethics and Digital Governance, Bangor University (forthcoming 2023-24)
- MA Sociology, Bangor University




Emotional AI
and Children
Ethics, Parents, Governance
2020 Report

Research node:

Artificial Intelligence Research Centre (CitAI)

Directors:

Dr Eduardo Alonso

Year of establishment:

2019

Number of researchers:

21-50

Parent organizations:

City, University of London

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, computer vision, ethical AI, intelligent robotics, machine learning, multi-agent systems

Selected publications, peer-reviewed

- X. Fu, S. Li, D. C. Wunsch, E. Alonso, "Local stability and convergence analysis of neural network controllers with error integral inputs", IEEE Transactions on Neural Networks and Learning Systems, 2021
- N. Kokkola, E. Mondragón, E. Alonso, "A double error dynamic asymptote model of associative learning", Psychological Review, vol. 126, no. 4, pp. 506–549, 2019
- A. Ter-Sarkisov, "One shot model for the prediction of COVID-19 and lesions segmentation in chest CT scans through the affinity among lesion mask features", Applied Soft Computing, vol. 116, 2022
- L. Daviaud, "Register complexity and determinisation of max-plus automata", ACM SIGLOG News, vol. 7, no. 2, pp. 4–14, 2020
- G. Tarroni, W. Bai, O. Oktay, A. Schuh, H. Suzuki, B. Glocker, P. M. Matthews, D. Rueckert, "Large-scale quality control of cardiac imaging in population studies: Application to UK Biobank", Scientific Reports, vol. 10, 2020
- D. Chicharro, S. Panzeri, R. M. Haefner, "Stimulus-dependent relationships between behavioral choice and sensory neural responses", eLife, vol. 10, 2021

Selected projects, funded by the European Commission or national agencies

- "AI art and the blockchain", EPSRC-Alan Turing Institute (Turing Network Development Award), 2022
- "DeepSync: Automated VFX for video dubbing", Innovate UK Smart Grant, 2022-2023
- "Learning, approximating and minimising streaming automata for large-scale optimisation", EPSRC New Investigator Award, 2020-2023
- InDeal, "Innovative technology for district heating and cooling", European Commission (grant no. 696174), 2016-2019

Related study programmes, doctoral or master levels

- Doctoral Training Programme in Industrial Artificial Intelligence, City, University of London
- MSc in Artificial Intelligence, City, University of London






UNIVERSITY OF CAMBRIDGE

Research node:
Cambridge Centre for Artificial Intelligence in Medicine

Directors:
Prof Mihaela van der Schaar
Prof Andres Floto

Year of establishment:
2020

Number of researchers:
11-20

Parent organizations:
University of Cambridge

Contact information:

Topics of expertise

Automated reasoning and interference, Machine learning, Reasoning under uncertainty

Selected publications, peer-reviewed

- Publications // van der Schaar Lab (vanderschaar-lab.com)

Selected projects, funded by the European Commission or national agencies

Related study programmes, doctoral or master levels

- PhD in Applied Mathematics, University of Cambridge PhD Programmes (cam.ac.uk)
- Ph

Cambridge Centre for AI in Medicine

elise

Research node:

Cardiff Centre for Artificial Intelligence, Robotics and Human-Machine Systems

Directors:

Professor Rossitza Setchi

Professor Stuart Allen

Professor Dylan M Jones

Year of establishment:

2019

Number of researchers:

51-100

Parent organizations:

Cardiff University

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, commonsense reasoning, computer vision, ethical AI, human interfaces, intelligent robotics, knowledge representation, machine learning, multi-agent systems, reasoning under uncertainty

Selected publications, peer-reviewed

- R. Setchi, I. Spasic, J. Morgan, C. Harrison, R. Corken, "Artificial intelligence for patent prior art searching", World Patent Information, vol. 64, pp. 102021, 2021
- X. Yang, Z. Ji, J. Wu, Y-K. Lai, C. Wei, G. Liu, R. Setchi, "Hierarchical reinforcement learning with universal policies for multi-step robotic manipulation", IEEE Transactions on Neural Networks and Learning Systems, 2021
- S. Gao, A.-H. Tan, R. Setchi, "Learning ADL daily routines with spatiotemporal neural networks", IEEE Transactions on Knowledge and Data Engineering, vol. 33, no. 1, pp. 143-153, 2021
- R. Setchi, K. Asikhia, "Exploring user experience with image schemas, sentiments, and semantics", IEEE Transactions on Affective Computing, 2017
- M. Bennasar, Y. Hicks, R. Setchi, "Feature selection using joint mutual information maximisation", Expert Systems with Applications, vol. 42, pp. 8520-8532, 2015
- S. Gill, et al., "AI for next generation computing: Emerging trends and future directions", Internet of Things, no. 100514, 2019

Selected projects, funded by the European Commission or national agencies

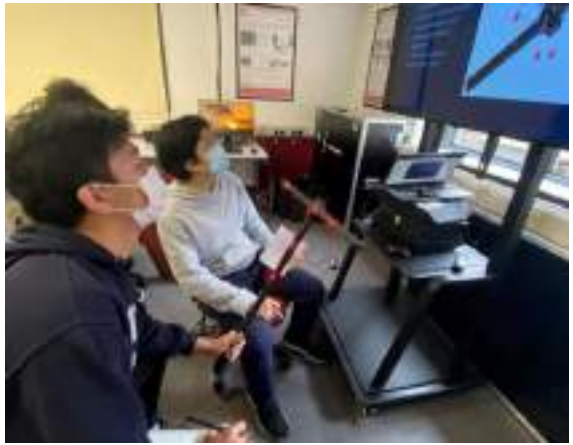
- "AI-assisted prior art search", Intellectual Property Office and Department for Business, Energy & Industrial Strategy, Regulators Pioneer Fund, 2019-2020.
- "AI-powered brain microstructure imaging", UK Research and Innovation (Future Leaders Fellowship, grant no. MR/T020296/1), 2020-2024
- "Plausible reasoning using ontologies with neural graph networks", The Leverhulme Trust, 2022-2024
- "Rule of law in the age of AI: Principles of disruptive liability for multi-agent societies", Economic and Social Research Council (grant no. ES/T007079/1, 2020-2023

Related study programmes, doctoral or master levels

- PhD Knowledge Representation and Reasoning, Cardiff University.
- MSc Artificial Intelligence, Cardiff University.








Research node:

Artificial Intelligence Research Centre (AIRC) at the School of Computing, Ulster University.

Directors:

Dr Jun Liu

Year of establishment:

2020

Number of researchers:

51-100

Parent organizations:

Ulster University

Contact information:

Topics of expertise

Automated reasoning and inference, cognition and AI, commonsense reasoning, computer vision, ethical AI, heuristic search, intelligent robotics, knowledge representation, machine learning, multi-agent systems, natural language processing, reasoning under uncertainty

Selected publications, peer-reviewed

- L. H. Yang, J. Liu, Y. M. Wang, F. F. Ye, C. Nugent, H. Wang, L. Martinez, "Highly explainable cumulative belief rule-based system with effective rule-base modeling and inference scheme", Knowledge-Based Systems, vol. 240, pp. 107805, 2022
- M. Wang, H. Y. Wang, H. R. Zheng, R. Dewhurst, R. Roehe, "A knowledge-driven network-based analytical framework for the identification of rumen metabolites", IEEE Transactions on NanoBioscience, vol. 19, no. 3, pp. 518-526, 2020
- D. H. Glass, "An evaluation of probabilistic approaches to inference to the best explanation", International Journal of Approximate Reasoning, vol. 103, pp. 184-194, 2018
- W. R. Song, H. Wang, P. Maguire, O. Nibouche, "Local partial least square classifier in high dimensionality classification", Neurocomputing, vol. 234, pp. 126-136, 2017
- S. J. Blair, Y. X. Bi, M. D. Mulvenna, "Aggregated topic models for increasing social media topic coherence". Applied Intelligence, vol. 50, no. 1, pp. 138-156, 2020
- G. Hawe, et al., "Agent-based simulation of emergency response to plan the allocation of resources for a hypothetical two-site major incident", Engineering Applications of Artificial Intelligence, vol. 46, pp. 336-345, 2015

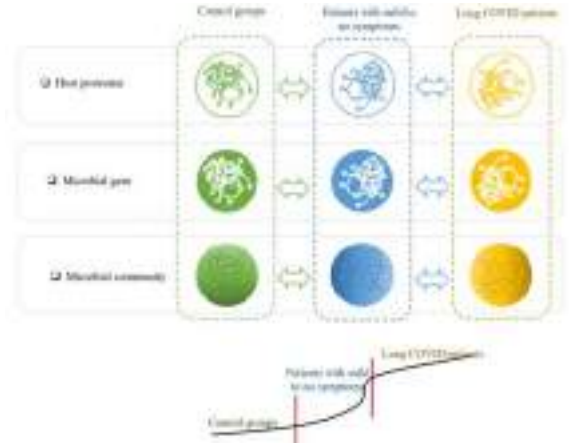
Selected projects, funded by the European Commission or national agencies

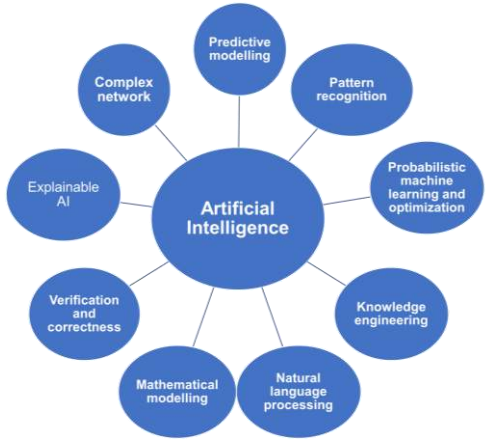
- MVSE "Multimodal Video Search by Examples", UK EPSRC (grant No.: EP/V002856/1), 2021-2024
- "Novel building Integration Designs for increased Efficiencies in Advanced climatically tunable renewable energy Systems", European Commission (grant no. 815271), 2019-2023
- MENHIR "Mental Health Monitoring Through Interactive Conversation", European Commission (grant No. 823907), 2019-2024
- Stop "STop Obesity Platform", European Commission (grant No. 823978), 2019-2023

Related study programmes, doctoral or master levels

- Ph.D. in Computer Science, Ulster University
- M.Sc. in Artificial Intelligence, Ulster University

Decision Support & Information Management System for Breast Cancer





Research node:

Intelligent Systems Research Laboratory

Directors:

Professor Atta Badii

Year of establishment:

2004

Number of researchers:

1-10

Parent organizations:

University of Reading

Contact information:

Topics of expertise

Constraint processing, ethical AI, human Interfaces, intelligent robotics, knowledge representation, machine learning, natural language processing

Selected publications, peer-reviewed

- A. Moin, M. Challenger, A. Badii, S. Günnemann, "A model-driven approach to machine learning and software modeling for the IoT. software and systems modeling", 2022
- F. Stahl, T. Le, A. Badii, M. M. Gaber, "A frequent pattern conjunction Heuristic for rule generation in data streams", Information, vol. 12, no. 1, pp. 24, 2021
- M. M. Idrees, L. L. Minku, F. Stahl, A. Badii, "A heterogeneous online learning ensemble for non-stationary environments", Knowledge-Based Systems, vol. 188, no. 104983, 2020
- A. Badii, W. Khan, "Pathological gait abnormality detection and segmentation by processing the hip joints motion data to support mobile gait rehabilitation", Research in Medical & Engineering Sciences, 2019
- M. S. Hammoodi, F. Stahl, A. Badii, "Real-time feature selection technique with concept drift detection using adaptive micro-clusters for data stream mining" Knowledge-Based Systems, 2018
- J. Wu, Q. Meng, S. Deng, H. Huang, Y. Wu, A. Badii, "Generic, network schema agnostic sparse tensor factorization for single-pass clustering of heterogeneous information networks", PLoS ONE, vol. 12, no. 2, pp. e0172323, 2017

Selected projects, funded by the European Commission or national agencies

- "Critical-Chains, IOT- & BLOCKCHAIN-ENABLED SECURITY FRAMEWORK FOR NEW GENERATION CRITICAL CYBER-PHYSICAL SYSTEMS IN FINANCE SECTOR", European Commission (grant no. 833326), 2019-2022
- CORBYS "Cognitive Control Framework for Robotic Systems", European Commission (FP7, grant no. 270219), 2011-2015
- "Companionable, Integrated Cognitive Assistive and Domotic Companion Robotic Systems for Ability and Security", European Commission (FP7, grant no. 21648), 2008-2012
- MOSAIC, Multi-Modal Situation Assessment & Analytics Platform, EC- FP7-Security-261776 April 2011- July2014

Related study programmes, doctoral or master levels

- PhD Studies in application of Machine Learning & Data Science, applied to medical and cyber security
- Masters Course in Advanced Computer Science (AI & Data Science)

LANGUAGE AND MULTIMODAL AI

Research node:
Language and Multimodal AI Lab (LAMA)

Directors:
Prof Lucia Specia
Dr Marek Rei

Year of establishment:
2018

Number of researchers:
11-20

Parent organizations:
Imperial College London

Contact information:



Topics of expertise

(multimodal) language generation, machine reasoning, machine translation, text adaptation, image captioning, transfer learning for language, NLP for health and sustainable development, quality evaluation and estimation, and language learning applications.

Selected publications, peer-reviewed

- H. Behnke, M. Fomicheva, L. Specia, "Bias mitigation in machine translation quality estimation", ACL, 2022
- J. Stacey, Y. Belinkov, M. Rei, "Supervising model attention with human explanations for robust natural language Inference", AAAI, 2022
- N Peinelt, M. Rei, M. Liakata, "GiBERT: Introducing linguistic knowledge into BERT through a lightweight gated injection method", EMNLP (Findings), 2021
- Z. Wang, Y. Miao, L. Specia, "Cross-modal generative augmentation for visual question answering", BMVC, 2021
- J. Ive, A. Mingren Li, Y. Miao, O. Caglayan, P. Madhyastha, L. Specia, "Exploiting multimodal reinforcement learning for simultaneous machine translation", EACL, 2021
- M. Tänzer, S. Ruder, M. Rei, "Memorisation versus generalisation in pre-trained language models", ACL, 2022

Selected projects, funded by the European Commission or national agencies

- DETOX "Detecting and Explaining Toxicity in Context", European Commission (Horizon Europe), 2022-2023
- RefGround "Referential grounding in multimodal machine translation", AFRL (European Office), 2018-2022
- MultiMT "Multimodal context modelling for Machine Translation", European Commission (H2020, ERC Starting Grant), 2016-2021
- Bergamot "Browser-based Multilingual Translation", European Commission (H2020), 2018-2021

Related study programmes, doctoral or master levels

- UKRI Centre for Doctoral Training in Safe and Trusted AI
- UKRI Centre for Doctoral Training in AI for Healthcare

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Research node:
BAS Artificial Intelligence Lab

Directors:
Dr Scott Hosking
Prof Maria Fox

Year of establishment:
2018

Number of researchers:
21-50

Parent organizations:
British Antarctic Survey (BAS)

Natural Environment Research Council (NERC)

Contact information:

Topics of expertise

Automated reasoning and inference, computer vision, constraint processing, machine learning, planning and action, reasoning under uncertainty

Selected publications, peer-reviewed

- T. Andersson, J. S. Hosking, et al., "Seasonal Arctic sea ice forecasting with probabilistic deep learning", Nature Communications, 2021
- R. Parthipan, H. M. Christensen, J. S. Hosking, D. J. Wischik, "Stochastic parameterizations: Better modelling of temporal correlations using probabilistic machine learning, early access
- E. Bowler, P. T. Fretwell, G. French, M. Mackiewicz, "Using deep learning to count albatrosses from space: Assessing results in light of ground truth uncertainty", Remote Sens., 2020
- E. Brown, F. Svoboda, N. P. Meredith, N. Lane, R. B. Horne,- "Attention-based machine vision models and techniques for solar wind speed forecasting using solar EUV images", Space Weather, vol. 20, 2022
- M. Fox, M. Meredith, J. A. Brearley, D. Jones, D. Long, "Long-range route-planning for autonomous vehicles in the polar oceans", early access
- R. Furner. P. Haynes, D. Munday, B. Paige, D. C. Jones, E. Shuckburgh, "Sensitivity analysis of a data-driven model of ocean temperature, early access

Selected projects, funded by the European Commission or national agencies

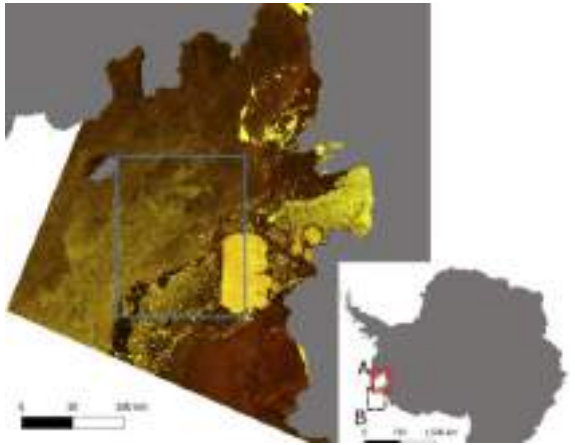
- DEFIANT "Drivers and Effects of Fluctuations in sea Ice in the ANTarctic", NERC (grant no. NE/W004747/1), 2021-2025
- IceNet " AI for predicting and understanding Arctic sea ice loss", EPSRC (grant no. EP/T001569/1), 2019-2021
- SDA-DT "AI and Digital Twinning for Decarbonisation", NERC, 2021-2023

Related study programmes, doctoral or master levels

- Ph.D. in Artificial Intelligence for Environmental Risks, University of Cambridge and British Antarctic Survey





Research node:
ELLIS Unit Manchester

Directors:
Magnus Rattray

Year of establishment:
2022

Number of researchers:
11-20

Parent organizations:
University of Manchester, UK

Contact information:

Topics of expertise

Cognition and AI, automated reasoning and inference, computer vision, human interfaces, intelligent robotics, machine learning, natural language processing, planning and action, and reasoning under uncertainty

Selected publications, peer-reviewed

- Cui, T., Kumar, Y., Marttinen, P., & Kaski, S. “Deconfounded representation similarity for comparison of neural networks” Advances in Neural Information Processing Systems, 35, 19138-19151, 2022.
- Gahungu, P., Lanyon, C., Alvarez, M. A., Bainomugisha, E., Smith, M. T., & Wilkinson, R. “Adjoint-aided inference of Gaussian process driven differential equations. Advances in Neural Information Processing Systems" 35, 17233-17247, 2022.
- Wu, C., Pan, W., Staa, R., Liu, J., Sun, G., & Wu, L. “Deep reinforcement learning control approach to mitigating actuator attacks” Automatica, 152, 110999, 2023.
- TM Mcdonald, M Ross, MT Smith, MA Álvarez, “Nonparametric Gaussian Process Covariances via Multidimensional Convolutions”, International Conference on Artificial Intelligence and Statistics, 8279-8293, 2023.
- M. Li, H. Takamura, S. Ananiadou. "A neural model for aggregating coreference annotation in crowdsourcing." Proc. of the 28th Intl. Conf. on Computational Linguistics. 2020.
- M. Sun, S. Devlin, J. Beck, K. Hofmann, S. Whiteson "Trust Region Bounds for Decentralized PPO Under Non-stationarity", AAMAS '23: Proc. 2023 Intl. Conf. on Autonomous Agents and Multiagent Systems, 5–13, 2023.

Selected projects, funded by the European Commission or national agencies

- Turing AI Fellowship: Human-AI Research Teams - Steering AI in Experimental Design and Decision-Making, UKRI (EP/W002973/1) 2021 - 2026
- UKRI AI Centre for Doctoral Training in Decision Making for Complex Systems, UKRI (EP/Y030826/1) 2024 – 2032
- EPHOR Exposome for Health and Occupational research, European Commission (grant no. 874703) 2020- 2024
- Manchester Turing Innovation Catalyst, Innovate UK, 2023 - 2025

Related study programmes, doctoral or master levels

- UKRI AI Centre for Doctoral Training in Decision Making for Complex Systems
- Data Science MSc

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