

Poznan Center of Competence in AI



Leading AI center in western Poland, comprising:

1. [Poznan University of Technology](#) (PUT)
2. [Center for Artificial Intelligence and Machine Learning](#) (CAMIL)
3. [Poznan Supercomputing and Networking Centre](#) (PSNC)

Competence: Supervised and unsupervised ML for:

- Explainable AI and decision support
- Learning from complex data (dynamic data streams)
- Search and optimization
- Computer vision, robotics, and autonomous systems
- Scalable AI with HPC
- Edge computing and extreme computing

Experience and resources:

- > 150 projects (FP5-7, H2020)
- > €200M funding
- > 500 researchers, software developers and engineers

Membership:

- [CLAIRE](#)
- [AI DIH \(Digital Innovation Hub\) Network](#)
- [Polish Alliance for AI](#) (initiated by PUT)
- [euRobotics](#)



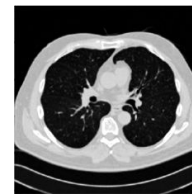
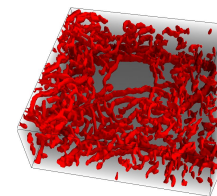
DEEP
LEARNING
INSTITUTE

Application areas:

- **Biomedicine:** supporting diagnostic and therapeutic decisions, medical imaging, improving patient adherence to therapy, formal representation of clinical practice guidelines and their analysis
- **Explainable AI:** Machine perception and decision making
- **Robotics:** Mobile and service robotics ready for Industry 4.0 integration
- **Automotive:** Advanced Driver Assistance Systems or city buses, large scale SLAM, and predictive maintenance with automotive industry partners
- **Energy:** Advanced resource and thermal management in distributed computational and power grids

Ecosystem:

- HPC Data Center and HPC4Poland DIH: AI computing platforms, Big Data storage, testbeds and simulation environments
- Industry: global companies, startups, incubator
- nVidia Deep Learning Institute



Poznan Center of Competence in AI: Project ideas

Project 1: Explainable and trustable AI

Objective: Research, design, and develop a unified methodology for interpretable machine learning systems, especially for areas where close interaction between humans and technology are essential.

Research topics:

- New learning architectures
- Evaluation criteria and frameworks
- Preference modeling and learning
- Perception and human in the loop
- Visualization
- New modes of interaction with users/humans
- Responsible AI and fair decision making

Application areas:

- Medicine: trustable diagnosing and imaging, clinical practice guidelines, reference medical cases
- Robotics: safe, robust and trustable agents: automotive, service and manufacturing

Project 2: Anywhere learning from complex data

Objective: Research, design, and develop systems that learn from complex, multimodal, concept-drifting and imbalanced data streams in distributed environments.

Research topics:

- Dealing with complex changes and novelty detection
- Limited access to costly expert feedback (new active learning methods)
- Handling incomplete and delayed information
- Complex instance representations and structured output
- Real-time interactive perception and learning from demonstration.
- One-shot learning

Application areas: IoT and HPC

- Cost-performance management of learning algorithms and computation resources
- AI for optimizing management of massive data
- Learning in physical, distributed and real-time systems



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Poster:

