

Jan Miksa

Machine Learning Researcher

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I am a Machine Learning Researcher and PhD Student at GMUM Jagiellonian University, currently working at IDEAS Research Institute. My research focuses on continual learning and machine unlearning, with an emphasis on the geometry and modularity of neural representations. I investigate how the structure of hidden representations can be used to control interference between tasks, preserve learned capabilities, and selectively modify neural network behaviour. My work combines mathematical perspectives on neural representations with empirical studies of deep learning systems, including large-scale diffusion models.

Selected Publications

- **BARRIER: Bounded Activation Regions for Robust Information Erasure.** Jan Miksa, P. Krukowski, P. Spurek, D. D. Rymarczyk, M. Sendera. 2026. (Preprint). [\[paper\]](#)
- **InTact: Interval-based Task Activation Consolidation for Continual Learning.** P. Krukowski, Jan Miksa, P. Helm, J. Tabor, P. Spurek. *NeurIPS*. 2026. (Accepted). [\[paper\]](#)
- **CLASP: Continual Low-rank Adapters for Spatially Placed Concepts from One Hypernetwork.** W. Gromski, P. Krukowski, Jan Miksa, M. Zieba, P. Spurek. 2026. (Preprint). [\[paper\]](#)
- **The general framework for few-shot learning by kernel HyperNetworks.** M. Sendera, M. Przewięźlikowski, Jan Miksa, M. Rajski, K. Karanowski, et al. *Machine Vision and Applications*, 34(4), 53. 2023. [\[paper\]](#)

Research Experience

Senior Machine Learning Research Engineer

May 2026 – Present

IDEAS Research Institute

Researching continual learning and machine unlearning, with an emphasis on activation-space methods for controlling interference and preserving model behaviour.

- Developing methods that use the geometry and structure of neural activations to support continual adaptation and targeted information removal.
- Investigating activation-level constraints and representation-space interventions in diffusion models and other deep neural networks.
- Designing and conducting experiments to evaluate forgetting, retention, and changes in model behaviour.
- Building tools for efficient activation tracking and analysis to support research on large neural networks.

PhD Researcher

July 2025 – Present

Jagiellonian University — GMUM

Research on continual learning and machine unlearning, focusing on the structure of neural representations and activation-level mechanisms for controlling model updates.

- Investigating representation-space methods for mitigating catastrophic forgetting and enabling targeted changes to learned behaviour.
- Developing and evaluating methods based on interval-bounded activations and geometric constraints.
- Conducting empirical research on deep neural networks, including diffusion models.

Researcher

October 2025 – October 2026

NCN grant no. 2023/49/B/ST6/01137

Unlearning in diffusion models.

Graduate Research Assistant

October 2023 – July 2025

Jagiellonian University — GMUM

- Conducted research in meta-learning, continual learning, and diffusion models.
- Designed neural architectures, custom layers, and end-to-end training pipelines.
- Explored hypergradient methods, neural optimizers, and consistency models.

Undergraduate Research Assistant

July 2022 – October 2023

Jagiellonian University — GMUM

- Developed Bayesian extensions of meta-learning models.
- Designed experiments to investigate uncertainty estimation in learning systems.

Industry Experience

Computer Vision / Machine Learning Engineer

April 2025 – April 2026

Aptiv

- Researched and designed neural network architectures for real-time multi-camera perception.
- Implemented custom TensorRT operators and optimized inference performance.
- Developed high-performance image-processing pipelines using CUDA and x86 SIMD.
- Integrated perception models into real-time systems using low-latency, zero-copy interfaces.

Junior Data Scientist

September 2024 – December 2024

OANDA

- Developed a Bayesian Marketing Mix Model in PyMC, covering model specification, inference, and validation.
- Built an interactive Streamlit interface and prepared deployment on Google Cloud Vertex AI.

Data Engineer / Associate Data Engineer

March 2023 – September 2024

OANDA

- Designed and maintained transaction-reporting and data-processing pipelines.
- Developed a declarative framework for Apache Beam pipelines and optimized cloud resource utilization.

Software Developer

October 2022 – February 2023

EUROLOOP / Willbert

- Built time-series analytics dashboards (Grafana + InfluxDB) for system monitoring.
- Integrated the UI with external systems (payment terminal, invoicing, ads platform).

Junior Software Developer

March 2022 – October 2022

EUROLOOP / Willbert

- Selected the technology and rebuilt the EV charger UI from scratch with a focus on performance and portability.
- Designed the UI system architecture supporting concurrent charging sessions.

Teaching

Teaching Assistant

September 2025 – Present

Jagiellonian University

- Tutoring the artificial intelligence olympiad preparatory class of the [Artificial Intelligence Club](#) at GMUM, which prepares secondary school students for the [Artificial Intelligence Olympiad](#).

Education

Doctor of Philosophy in Technical Computer Science, *Jagiellonian University*

2025 – Present

Master's Degree in Computational Mathematics, *Jagiellonian University*

2023 – 2025

Bachelor's Degree in Computational Mathematics, *Jagiellonian University*

2020 – 2023

Skills

Core research: Machine Learning, Deep Learning, Continual Learning, Representation Learning, Computer Vision, Research

Methods and topics: Machine Unlearning, Transfer Learning, Meta-Learning, Generative Models, Diffusion Models, Neural Networks

Research implementation: PyTorch, Python, CUDA, Model Optimization, Experimental Design, Scientific Computing

Systems engineering: C++, TensorRT, High-Performance Computing, GPU Computing, Computer Architecture, Linux, Docker

Additional experience: Rust, SQL, Google Cloud Platform (GCP), Apache Beam, Data Engineering, Bayesian Statistics