

MACIEJ CICHON

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EDUCATION

Bachelor of Computer Science, University of Lodz

2023 - 2027

SKILLS

Languages	Python, C, C++, Haskell, CUDA C, SQL
ML/AI	PyTorch, JAX, model implementation from research literature, quantization, experience with diffusion models, transformers, segmentation, autoencoders, RAG
Tools	vLLM, SLURM/HPC (GH200 clusters), AWS, Google Cloud, MatLab, CST Studio, Antenna Magus, llama.cpp, Langchain, Lean4, tree-sitter, Clang LibTooling, ASan/UBSan
Domain	Statistical analysis, LLM evaluation, RF/microwave engineering, bioimpedance, medical imaging, time series analysis, vulnerability detection, cybersecurity

EXPERIENCE

Researcher, FENG grant

Jun 2026 - Present

University of Lodz, Faculty of Physics and Applied Informatics

Lodz, Poland

"Opracowanie systemu do zintegrowanej analizy widmowej sygnałów mikrofalowych i bioimpedancyjnych w diagnostyce niewydolności serca" - Development of a system for integrated spectral analysis of microwave and bioimpedance signals in heart failure diagnostics (**8.29M PLN**, TEAM-NET FENG programme of the Foundation for Polish Science; consortium with Warsaw University of Technology led by prof. Teodor Buchner; University of Lodz team led by dr inż. Maciej Ślot, RuFuS lab)

- Machine learning researcher in an interdisciplinary consortium, extending earlier microwave heart-failure work to joint microwave and bioimpedance signal analysis
- Also the team's statistician and simulation analyst: statistical analysis of measurement and clinical data, analysis of electromagnetic simulations, and reducing the compute cost of the simulation pipeline
- Designed and wrote **two ex vivo feasibility studies accepted by the bioethics committee** (dielectric characterization of appendices in acute appendicitis and of lymph nodes in lymphadenopathy, pediatric population), run jointly with WUM UCK; responsible for the engineering side of running them

striga.ai - R&D & Machine Learning

Jun 2026 - Present

Warsaw, Poland

- Research and development of machine learning methods at an AI source code auditing startup (ISEC spin-off, seed-funded) that finds, validates and reports 0-day vulnerabilities with working proofs of concept
- First author of a NeurIPS 2026 workshop paper (TAE, accepted) showing that how well an LLM appears to detect code vulnerabilities depends heavily on how the benchmark is scored, how the model's answer is read out, and how the labels were produced. **Evaluated 61 open-weight models (1.5B-36B) and 7 API models** on 5,700 vulnerable/fixed code pairs from five public benchmarks and our own data
- Ran the whole evaluation on the **Helios GH200 supercomputer**: SLURM jobs, vLLM serving for dozens of models with automatic recovery from out-of-memory and context-length errors, jobs that resume after interruption, answer grading by open LLMs (Llama-3.3-70B, gpt-oss-120b, Qwen3-32B), and linear probes on the hidden activations of 67 models
- Got 100B+ mixture-of-experts models running across several nodes (vLLM, Ray, NCCL on aarch64); found, documented and patched several vLLM bugs to get there

- Built a pipeline that turns publicly fixed C/C++ vulnerabilities into training examples with step-by-step reasoning, each confirmed by compiling and crashing the code under ASan/UBSan and checked by a second LLM; built a code-obfuscation tool (tree-sitter, Clang LibTooling) to test whether a detector understands a bug or only recognizes its familiar shape

Researcher, KPO grant "RuFuS"

Mar 2025 - Apr 2026

University of Lodz, Faculty of Physics and Applied Informatics

Lodz, Poland

"Implementacja spektroskopii mikrofalowej w diagnostyce niewydolności serca oraz rehabilitacji hipotonii mięśniowej"
- Implementation of microwave spectroscopy in heart failure diagnostics and rehabilitation of muscular hypotonia (**3.25M PLN**, Medical Research Agency call 2024/ABM/03/KPO under the National Recovery Plan; team led by dr inż. Maciej Ślot, RuFuS lab)

- Sole machine learning researcher in interdisciplinary team of physicists and medical researchers
- Developed PyTorch-based 32-class cardiac condition classifier achieving **~80% accuracy** on noisy RF spectroscopy data, **exceeding expert human assessment (~50%)**
- Developed and validated signal reconstruction method demonstrating feasibility of time-gated analysis from partial magnitude data (**~95% accuracy from 10% of original data**), potentially reducing hardware costs for production deployment
- Built and maintained unified analysis toolkit for lab-wide use (**6000+ lines refactored into modular code-base**); rewrote performance-critical components in C for real-time visualization of 300+ measurement curves, utilizing matplotlib, scipy, scikit-rf and MatLab
- Used JAX to implement **non-Gaussian denoising diffusion model** from research literature for experimental data preprocessing, achieving **~85% denoising accuracy**

PUBLICATIONS & MANUSCRIPTS

"When Magnitude Suffices: Reconstructing Time-Domain-Gated Microwave Signals Without Phase for Biomedical Application". First author. RuFuS project. Submitted to Measurement, under review.

"A Function-Level Vulnerability Score Measures Flag Rate More Than the Model: Protocol Effects on Paired Benchmarks". First author. Accepted at the NeurIPS 2026 workshop "Can We Trust AI Evaluation?" (TAE). [arXiv:2609.32890](https://arxiv.org/abs/2609.32890).

"Machine learning and multimodality imaging in cardiac sarcoidosis: a systematic review". First author. Joint work with WUM UCK; in internal review before submission. A further cardiac sarcoidosis manuscript in preparation.

"Aperture-limited near field superstrates for gain restoration in miniaturized helical antennas". Co-author. Scientific Reports, 2026. [doi:10.1038/s41598-026-74037-x](https://doi.org/10.1038/s41598-026-74037-x).

"Diagnostic Performance of Imaging Techniques in MEN1-Associated Primary Hyperparathyroidism: A Systematic Review and Meta-analysis". Co-author. Meta-analysis combined with WUM UCK clinical data. Submitted to a Nature Portfolio endocrinology journal, under review.

CONFERENCES & INVITED TALKS

Two presentations at (Hyper)Complex Conference 2024: "Quaternion and Complex Neural Networks" - comparative analysis of complex and quaternion-valued neural networks against traditional architectures; "Use of ML-tools in Automated Theorem Proving" - exploration of LLM integration in automatic proof assistants. [conference site](#), [archived](#)

"Hiperzespólone sieci neuronowe i ich zastosowanie" - Invited seminar Jagiellonian University, Faculty of Physics, Astronomy and Applied Computer Science. Overview of cutting-edge hypercomplex neural network research with practical considerations.

"Hypercomplex neural networks": 49th Congress of Polish Physicists, InnoFusion - Conference talk on applications of hypercomplex neural networks in RF spectroscopy [link](#)