



Damian Sójka

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Research Summary

PhD Candidate at Poznan University of Technology and IDEAS NCBR specializing in **Test-Time Adaptation (TTA)**, **Machine Learning**, and **Machine Perception**. My research aims to build robust, intelligent perception systems capable of continuous learning and adaptation in dynamic environments. I am the **Principal Investigator (PI)** of a competitive PRELUDIUM grant funded by the National Science Centre, and my background includes **embedded R&D for bionic hand prostheses** at Aether Biomedical. Currently, as a **MARS Fellow** at the Cambridge AI Safety Hub, I benchmark **LLM capabilities** for agentic AI development. My research is published in premier venues including **ICRA**, **BMVC**, **ECML**, and specialized workshops at **ICML** and **ECCV**, and was recognized with an Innovation Award at **ICCV** workshop.

Professional Experience

- Dec 2022 – present 📖 **PhD Researcher, IDEAS NCBR (Continual Machine Learning Group)**
- Conducting research on TTA and CV at a leading Polish AI R&D center.
- Dec 2025 – present 📖 **MARS Fellow, Cambridge AI Safety Hub**
- **Benchmarking Agentic AI:** Collaborating with Arcadia Impact to improve benchmark reliability for agentic LLM evaluation in AI R&D.
 - **Framework Development:** Engineering benchmarks within the UK AI Safety Institute's (AISI) *Inspect Eval*s open-source framework.
 - **Automated Validation:** Developing an LLM-based scanner for transcript analysis to detect benchmark validity violations.
- Sep 2024 – Nov 2024 📖 **Research Intern, ENSTA Paris**
- **TTA for Depth Estimation:** Worked on improving reliability of depth estimation under distribution shifts via TTA with Profs. David Filliat and Antoine Manzanera.
- Jul 2021 – Nov 2022 📖 **Embedded Software Developer, Aether Biomedical**
- Conducted R&D for bionic hand software, including real-time logging system.
- 2019 – 2020 📖 **Industrial Experience (Farmutil HS, Qubiq)**
- Assembly of control cabinets and maintenance of industrial production lines.

Education

- Jan 2023 – now 📖 **PhD in Deep Learning, Poznan University of Technology.**
- My research is focused on TTA and Machine Perception.
 - Supervisors: Prof. Piotr Skrzypczyński and Prof. Michał Nowicki.
- Mar 2021 – Sep 2022 📖 **MSc in Automatic Control and Robotics, Poznan University of Technology.**
- MSc thesis: *Triplet Loss in Haptic Localization of a Walking Robot*.
 - Member of a student team building autonomous race car to compete in Formula Student events.
 - Rector's Scholarship for high-achieving students.
- Oct 2017 – Feb 2021 📖 **BSc in Mechatronics, Poznan University of Technology.**
- BSc thesis: *Control of Logistics Tractor Using Artificial Intelligence Methods*.
 - Rector's Scholarship for high-achieving students.

Papers

- 1 D. Sójka, S. Cygert, and M. Masana, "Subspace optimization for backpropagation-free continual test-time adaptation", in *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*, 2026. [URL: https://arxiv.org/pdf/2603.28678v1](https://arxiv.org/pdf/2603.28678v1).
- 2 D. Sójka, M. Masana, B. Twardowski, and S. Cygert, "Rethinking the teacher-student framework for test-time adaptation", in *Fifth Conference on Lifelong Learning Agents (CoLLAs)*, 2026. [URL: https://openreview.net/pdf?id=Chq40Q3p18](https://openreview.net/pdf?id=Chq40Q3p18).
- 3 S. Cygert, D. Sójka, T. Trzciński, and B. Twardowski, "Realistic evaluation of test-time adaptation algorithms: Unsupervised hyperparameter selection", in *Proceedings of the 21st International Conference on Computer Vision Theory and Applications (VISAPP)*, 2026. [URL: https://arxiv.org/pdf/2407.14231](https://arxiv.org/pdf/2407.14231).
- 4 D. Sójka, M. Masana, B. Twardowski, and S. Cygert, "Adaptive monocular depth estimation with masked image consistency", in *Second Workshop on Test-Time Adaptation at ICML*, 2025. [URL: https://openreview.net/pdf?id=qqTYN705w5](https://openreview.net/pdf?id=qqTYN705w5).
- 5 D. Sójka, B. Twardowski, T. Trzcinski, and S. Cygert, "Ar-tta: A simple method for real-world continual test-time adaptation", in *35th British Machine Vision Conference (BMVC)*, BMVA, 2024. [URL: https://arxiv.org/pdf/2309.10109](https://arxiv.org/pdf/2309.10109).
- 6 D. Sójka, M. R. Nowicki, and P. Skrzypczyński, "Triplet loss-based metric learning for haptic-only robot localization", in *Progress in Polish Artificial Intelligence Research 5 : Proceedings of the 5th Polish Conference on Artificial Intelligence (PP-RAI)*, 2024. [URL: https://pages.mini.pw.edu.pl/~estatic/pliki/PP-RAI_2024_proceedings.pdf#page=357](https://pages.mini.pw.edu.pl/~estatic/pliki/PP-RAI_2024_proceedings.pdf#page=357).
- 7 D. Sójka, M. R. Nowicki, and P. Skrzypczyński, "Learning an efficient terrain representation for haptic localization of a legged robot", in *IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2023. [URL: https://arxiv.org/pdf/2209.15135](https://arxiv.org/pdf/2209.15135).

Other Achievements

Awards and Grants

- 2024  Polish National Science Centre PRELUDIUM grant for a research project "Reliable and Efficient Real-World Test-Time Adaptation".
- 2023  Innovation award and 3rd place in Continual Test Time Adaptation for Semantic Segmentation challenge organized within Visual Continual Learning workshop at ICCV 2023.

Presentations

- 2025  **Ellis Doctoral Symposium on Robust AI**. Presented a poster "Adaptive monocular depth estimation with masked image consistency".
- 2024  **International Computer Vision Summer School (ICVSS)**. Presented a poster "AR-TTA: A Simple Method for Real-World Continual Test-Time Adaptation".
- 2023  **ML in PL Conference**. Presented a poster "AR-TTA: A Simple Method for Real-World Continual Test-Time Adaptation".

Skills

- Machine Learning**  PyTorch (Expert-level), TensorFlow, WandB, Scikit-learn. Experience in TTA, OOD generalization, Computer Vision, and LLM benchmarking (Inspect Evals).
- Tools & Robotics**  Docker, SLURM, Git, ROS2, OpenCV, Linux, Embedded Software Development.
- Languages**  Python (Proficient), C (Proficient), C++ (Basic), LaTeX, Bash. Fluency in English and Polish.
- Scientific Writing**  Paper and grant proposal writing (Principal Investigator), peer-reviewing, and presenting at international conferences (ICRA, BMVC, ECML, ICCV).