

Michael Petrowski

Düsseldorf, Germany | German Nationality

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EDUCATION

University of Düsseldorf (Germany), MSc Artificial Intelligence 2025 - present

- Current relevant courses: Probabilistic Machine Learning, Deep Learning, Mathematical and Statistical Foundations of Data Science

University of Düsseldorf (Germany), BSc Computer Science 2022 - 2025

- **Final Grade: 1.4** (scale of 1.0 – 5.0, 1.0 being best)
- Bachelor's thesis supervised by Prof. Gašić, **graded with 1.0** (scale of 1.0 – 5.0, 1.0 being best)
- Relevant courses: Data Science, Introduction to Deep Learning, Algorithms and Data Structures, Linear Algebra, Real Analysis, Probability Theory and Statistics

University of Mannheim (Germany), BSc Business Administration 2021 - 2022

- **Average Grade: 1.5** (scale of 1.0 – 5.0, 1.0 being best)
- Transferred to Computer Science after two semesters

RESEARCH EXPERIENCE

Student Researcher Dialogue Systems and ML Group (Prof. Gašić) Oct 2025 - present

- Developing a novel **Reinforcement Learning** framework to optimise **Large Language Models** for complex task-oriented **dialogue systems**
- Expanded on Bachelor's thesis research, resulting **paper accepted** at the **AAAI-2026** Conference Workshop on Theory of Mind for Artificial Intelligence (ToM4AI)

Bachelor's Thesis Supervised by Prof. Gašić Mar 2025 - Sep 2025

- Title: “The Impact of Simulated Pain on a Reinforcement Learning Agent”
- Formulated a novel **reward design** within the **Reinforcement Learning** framework
- Integrated a **Bayesian inference**-driven, pain-inspired signal into **Q-Learning** agents, using **Hidden Markov Models**
- Established through computational experiments that this intrinsic signal serves as a robust **exploration incentive**, outperforming standard reward-based baselines
- Modelled normal and **chronic pain**-inspired variants, yielding agent behaviours that mirrored findings in psychology and neuroscience

WORK EXPERIENCE

IT Working Student Chamber of Consumer Rights, Düsseldorf (Germany) Jul 2020 - Sep 2025

- Designed and implemented the database schema of the in-house asset management system via **Entity-Relationship modelling** and **SQL**, now deployed in production
- Extended IT infrastructure with a new ticketing system and custom **Python** automation scripts
- Provided cross-departmental IT support and maintained operational infrastructure

Business Development Intern SAP, Walldorf (Germany)

Jul 2022 - Aug 2022

- Supported the acceleration of SAP’s strategic Industry Cloud portfolio in a **global team**
- Delivered a **board-level presentation** for CEO Christian Klein
- Contributed to key performance metrics tied to executive-level initiatives

SCHOLARSHIPS

German National Scholarship University of Düsseldorf (Germany)

Oct 2024 - present

- **Merit-based** scholarship awarded to high-achieving students (limited to **1.5%** of the student body university-wide)
- Personally invited to apply by the Dean of Studies and **re-awarded** for consistent academic excellence

PUBLICATIONS

Petrowski, Michael and Milica Gašić (2026). “Exploration Through Introspection: A Self-Aware Reward Model”. In: *Advancing Artificial Intelligence through Theory of Mind Workshop*. In press.

FURTHER ACTIVITIES

Online Examination Platform Project at University of Düsseldorf (Germany)

2024

- Developed a digital examination system as a web application in a team over three months using **Java, Spring Boot, SQL, Docker**, HTML, CSS, Thymeleaf

Student Grading Application StartHack Hackathon Competition, St. Gallen (Switzerland)

2024

- Collaboratively built in 48 hours using **Python** in response to a city-commissioned challenge
- Designed to support teachers in managing and grading student performance

Head of Sports of the Student Council University of Mannheim (Germany)

2022

- Represented the university and led a team of 70 participants at WHU Euromasters, Europe’s largest business school sports event (2000+ participants)
- Managed a **five-digit budget**; acquired sponsors and produced a team anthem and music video for the event

SKILLS

Languages	German (native), Russian (native), English (C1), Spanish (B1)
ML and AI	Reinforcement Learning, Machine Learning, Deep Learning, Bayesian methods, Hidden Markov Models, Regression, Classification, Clustering, LLMs, Transformers, Autoencoders, CNN
Programming	Python (NumPy, Pandas, PyTorch, Matplotlib, scikit-learn), Java (Spring Boot), Clojure, SQL, C, HTML, CSS
Tools	Linux environments, Git, Docker, LaTeX, Microsoft Office
Interests	Swimming, Fitness, Piano, Cooking, Entrepreneurship