Stepan Feduniak

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Education

Technical University of Munich (TUM)	**Oct 2025 – Ongoing**
Bachelor of Science in Mathematics	*Munich, Germany*
Studienkolleg at Karlsruhe Institute of Technology	**Oct 2024 – Jul 2025**
University entrance qualification (Feststellungsprüfung – T-Kurs); Grade: 1.4	*Karlsruhe, Germany*
Lviv Physics and Mathematics Lyceum	**Sep 2020 – Jun 2024**
High School Diploma	*Lviv, Ukraine*

Experience

Research at Learning Systems and Robotics Lab, TUM	**From Nov 2025**
Joint research project between KIT and TUM. Safe Reinforcement learning for VLA models.	*Munich, Germany*
Research Assistant at Intuitive Robots Lab, KIT	**May 2025 – Oct 2025**
Integrating tactile sensing into flow-matching and vision-language-action (VLA) policies	*Karlsruhe, Germany*

* Fine-tuned and deployed VLA models (GrootN1, SmolVLA, FlowerVLA) on a Franka Emika Panda robot for multi-task manipulation.
* Compared tactile embeddings obtained from models trained with self-supervised and contrastive learning using PCA and t-SNE; integrating them into existing policies (VLAs, BESO, Diffusion Policy).
* Implemented and tested multi-modal sensor fusion approaches, using saliency maps to verify effective use of language, visual and tactile modalities.
* Worked on own research project on injecting multimodal observations into VLA models using hierarchical **refinement policy**.

Olympiad Mathematics Blog & Tutoring	**Apr 2024 – Sep 2025**
Founded a math club and lead a volunteer math Olympiad preparation tutoring team for over a year.	*Blog*

Achievements

Humanoid Manipulation Hackathon, Munich	**Sep 2025**
Implemented BESO and BEAST robotic policies in LeRobot and used explainable AI. Won the Siemens challenge.	*Link*
Romanian Master of Mathematics Olympiad (RMM) Olympiad	**2024**
Honorable Mention	
Ukrainian Mathematics Olympiad – National Level	**2024**
Diploma of the 3rd Degree	

Projects

Deep Reinforcement Learning on Atari Environments	**Mar 2025**
Implemented Rainbow DQN for Atari games using PyTorch and OpenAI Gym from the paper	*GitHub*
Kaggle Competition – LuxAIS3	**Feb 2025**
Implemented and tested RL and Behavior Cloning algorithms (DQN, A2C, PPO, Dagger) in a multi-agent game	

Certifications and Self Learning

Deep Learning Specialization	**Dec 2024**
Coursera (DeepLearning.AI, Andrew Ng)	*Certificate Link*
Generative AI with Diffusion Models	**Feb 2025**
NVIDIA Workshop	*Certificate Link*
Reinforcement Learning	
Mathematical Foundation of RL, Recordings of CS 285 at UC Berkeley (Deep RL)	
Mathematics for ML	
Linear Algebra, Multivariable Calculus, Probability, Convex Optimization, Information Theory, Real Analysis	
Generative AI (From DeepLearning.AI)	
Embedding Models, Text Embeddings, Open Source Models with Hugging Face, Vector Databases, Knowledge Graphs for RAG	