Sandro Paradžik

sandro.paradzik@gmail.com • sandropa.github.io
sandropa • sandro-paradzik

Education

BSc in Theoretical Computer Science: University of Sarajevo *Expected Graduation: July 2025*

Research Experience

CaCTüS Intern: MPI for Biological Cybernetics *Tübingen, July – September 2024*

- Applied dynamic mode decomposition (DMD) to analyze calcium imaging data from zebrafish larvae brains, aiming for data-driven discovery of functional subnetworks.
- Extracted significant spatiotemporal patterns, notably oscillatory dynamics in the optic tectum potentially reflecting winner-take-all circuit mechanisms.
- Demonstrated DMD's advantage in capturing coupled spatial and temporal neural dynamics compared to traditional methods (e.g., PCA, ICA, DFT).
- Contributed to research within the RoLi Lab (Drs. Drew Robson & Jennifer Li), supervised by Dr. Sophie Aimon.
- Selected for a competitive program with a 1.35% acceptance rate in 2024.

PSI Project Participant: ANNT *Sarajevo, July – December 2023*

- Investigated uncertainty quantification techniques, including approximate Bayesian computation (ABC) and history matching (HM), for agent-based models in a UROP-like project.
- Critically reviewed scientific literature and presented findings on UQ approaches.
- Organized by Association for the Advancement of Science and Technology (ANNT). Supervised by Dr. Kenan Šehić.

Industry experience

Math Expert: Mercor *October 2024 – Present*

- Training LLM models (correcting their responses and providing solutions on which these models can be trained on) to solve math problems, covering high school to olympiad level problems.

AI/ML Intern: One Thousand *Berlin, February – April 2025*

- Developed and maintained components for automating business document processing (e.g., invoices, offers) workflows using Python, FastAPI, and LLM APIs.
- Applied prompt engineering techniques for structured information extraction from documents.
- Contributed to short-term projects including predictive modeling for demand forecasting and automated web data gathering for lead generation support.
- Utilized Git for version control and gained practical experience with software development practices in a fast-paced startup environment.

Selected Teaching and Mentoring

Lecturer: Math School for Gifted Students *2022 – Present*

- Regularly deliver lectures and problem-solving sessions on advanced mathematics to prepare high-school and middle-school students for competitions; also serve as a lecturer during math camps held twice a year.
- Organized by The Association of Mathematicians of Sarajevo Canton.

Tutor: MetaMath *2022 – Present*

- Tutoring on advanced mathematical concepts and competition problem-solving techniques for the MetaMath training program (supported by Croatian Mathematical Society).

Selected Awards from Math Competitions

Mediterranean Mathematics Competition (Peter O'Halloran Memorial): **Bronze** *2021*

Federation of Bosnia & Herzegovina: Ranked **2nd** *2021*

Mediterranean Mathematics Competition: **Honorable Mention** *2019*

Federation of Bosnia & Herzegovina: Ranked **1st** *2019*

Mediterranean Mathematics Competition: **Bronze** *2018*

Federation of Bosnia & Herzegovina: Ranked **3rd** *2018*

Personal Projects

Solving Markov Decision Processes Using Linear Programming:

- Implemented a solution to a toy problem using linear programming based on Bellman optimality equations.
- *Link to blog post*

Solving the Cutting Stock Problem:

- Compared performance of different algorithms for solving the 1D cutting-stock problem with focus on column generation approach.
- *Link to blog post*

Skills

- Research, teaching, creative problem solving, technical communication, analytical thinking

Programming

Python, C++, Git, LaTeX

Languages

Bosnian (native, also Croatian and Serbian), English (C1)