Barbara Makovec

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ABOUT ME

I'm a third-year Computer Science and Mathematics student with a strong interest in quantitative modeling, data analytics and understanding how complex real-world systems behave. In Uni and in ML projects I gained experience in preprocessing large datasets, built pipelines and developed AI models. I am independent and learn very quickly - my study in computer science and math helps me approach problems logically and analitically. I enjoy combining my skills with data from other areas, such as economics, to find solutions that apply to real problems.

EDUCATION AND WORK

BSc in Computer Science and Mathemathics (IŠRM) 2023-2025
Univerza v Ljubljani

- year 3/3, average 8.5/10
- *Technical skills*: Python, C++, Machine learning (regression models, GNNs, RAG pipelines for NLP), optimization methods, statistics
- *Extracurriculars*: President of Student Programming Club at Faculty, organising workshops in programming, community work.

Internship 2024
Jožef Stefan Institute, Department for Artificial Intelligence

- Built a Retrieval-Augmented Generation (RAG) pipeline & a dense retrieval model to automate the generation of compliance reasoning data from legal documents using Python
- Developed data preprocessing pipelines by cleaning and transforming large datasets into SQL databases
- Applied techniques such as zero-shot Chain of Thought (CoT) prompting, embedding-based similarity search, and custom overlap-based text segmentation to maximize the retrieval and interpretation accuracy of AI models.
- Co-authored and published a paper at RuleML+RR'24 conference with two colleagues
- Code available on GitHub: `https://github.com/makov3c/legal-AI`

Relevant personal projects

Machine learning on graphs - Stanford course september 2025 - january 2026

- Implemented machine learinng models in Python to analyse relational datasets (graphs, networks, databases, etc.)
- Built and trained neural networks for node-level prediction and graph-level clasiffication using PyTorch, PyG, ...
- Applied GNNs, GATs (graph attention transformers) and temporal transformer architectures in a current project to predict movement patterns in groups of fish (spatial modeling)

Selfhosting a server

- I selfhost a personal Linux server for web hosting, mail and file management
- Here i learn networking basics, system monitoring, backups and deploying small web services

Hackatons and competitions

- I like to participate in hackathons because they combine problem-solving with teamwork. I thrive in collaborative environments and enjoy working on projects together
- Some recent hackatons: ADA Hackaton, Arnes Hackaton, DragonHack, Flare Hackaton, ...
- Last 3 years I participate in Uni programming marathon (UPM) and made it to finals every year

SCIENTIFIC PUBLICATIONS

- Makovec, B., Rei, L., Novalija I. (2024). Preparing AI for Compliance: Initial Steps of a Framework for Teaching LLMs to Reason About Compliance. RuleML+RR'24: 8th International Joint Conference on Rules and Reasoning. `https://ceur-ws.org/Vol-3816/paper63.pdf`