

Matea Lukić

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EDUCATION

- Faculty of Organizational Sciences, University of Belgrade** Belgrade, Serbia
*PhD in Optimization and Analytics with focus on **Federated Learning*** *2025 – Present*
- Faculty of Organizational Sciences, University of Belgrade** Belgrade, Serbia
Master in Information Engineering (10.0) – Bachelor in Information Systems and Technologies (9.70) *2020 – 2025*

EXPERIENCE

Research Associate Apr. 2026 – Present
Mathematical Institute, Serbian Academy of Sciences and Arts

- Conducting research in **machine learning**, **heuristic optimization**, and **deep learning**.
- Fine-tuning models and orchestrating **multi-GPU training** workflows on **HPC clusters** using **Slurm**.

AI Developer Aug. 2025 – Present
Freelance

- **Voice-Enabled Educational Toy**
 - Integrated **FastRTC** speech-to-text and text-to-speech for real-time voice interaction on edge hardware.
 - Implemented an **LLM-as-a-judge** evaluation pipeline to score response correctness and safety.
 - Containerized **FastAPI** services with **Docker** for edge deployment on **NVIDIA Jetson Nano**.
- **Medical Document Intelligence**
 - Developed **document parsing pipelines** for medical-domain records using **multimodal LLMs**.
 - Benchmarked **PaddleOCR-VL**, **QwenVL**, and **DeepSeek-VL** for OCR accuracy and extraction performance.
 - Integrated a **knowledge graph-based QA module** to enhance **multi-hop reasoning** over extracted medical entities and relationships.
- **Edge Face Analysis Pipeline**
 - Built a pre-screening pipeline with **blur detection**, **glare detection**, and **face orientation estimation** to ensure image quality before inference.
 - Integrated **face detection** as a gating stage to reject invalid frames prior to age estimation.
 - Designed and deployed a **lightweight mobile architecture** for real-time **age estimation** on edge devices.

Teaching Associate Oct. 2023 – Apr. 2026
Faculty of Organizational Sciences

- Delivered lectures and lab sessions for *System Theory* and *Neural Networks* courses.
- Taught **Python** programming and core **deep learning** concepts to undergraduate and master students.

Machine Learning Engineer Dec. 2025 – Apr. 2026
MSA IP

- Built **deep metric learning** pipelines to improve embedding quality for high-dimensional **similarity search**.
- Generated synthetic trademark variations across styles using **GANs** and **Diffusion models**.
- Fine-tuned **ResNet-18** and deployed it via **Triton Inference Server** using **ONNX**.
- Built a **multi-agent LLM pipeline** for automated trademark examination with parallel expert agents for multilingual semantics and geographical indication detection.
- Fine-tuned and deployed **BERT** classifiers on historical decision data.
- Applied **GEPA** and **MIPROv2** for automated prompt optimization.

Contract AI Developer Jan. 2025 – Aug. 2025
Smart Consulting and Quarks Team

- Developed **Python**-based backend automation for parsing and analyzing complex **Jira** reports.
- Applied **T5** models to generate human-readable summaries of technical and project data.
- Built **multi-stage summarization pipelines** to handle token limits using **LLaMA** and the **GPT-4** API.

NLP Intern Nov. 2024 – Jan. 2025
Blinking

- Built a **RAG** chatbot with **LangChain** and **ChromaDB**; used **Redis** for persistent conversation history.
- Integrated **LLMs** for real-time **content moderation** and semantic relevance classification.
- Developed an automated **Q&A workflow** using **OpenAI APIs** to resolve customer product questions.

PUBLICATIONS

M. Lukic et al., "From Fuzzy to IBA-based Interpretable Client Selection in Federated Learning"	2026 EAIS
M. Lukic et al. (2nd author), "Context-Adaptive Concept Networks"	2026 EAIS
M. Lukic et al., "On the Role of Aggregation Operators in the Deployment of Federated Learning"	2026 IEEE Xplore
M. Lukic et al. (2nd author), "AI Framework for Unlocking Actionable Insights from Text Reviews"	2025 Mathematics
M. Lukic et al., "MLOps Tools for Deployment: A Case Study on Text Classification"	2025 IEEE Xplore
M. Lukic et al., "Red Teaming Generative AI Applications: Threat Modeling and Mitigation Strategies"	2025 Symopis

ACCOMPLISHMENTS

- Reviewed papers in **IEEE Access** and **Computer Science and Information Systems** Journals.
- Ranked in **top 5%** on multiple **Kaggle** competitions including Survival Analysis, Computer Vision and RAG tasks.
- Won the **Best AI Project Award** at **UniHack Romania 2024** using Databricks.
- Ranked **Top 10** IT student at the Faculty of Organizational Sciences (2024/25); **Dositej Scholarship** recipient.
- Qualified for the **Serbian Cybersecurity Challenge** (2022, 2023); invited to the **2023 national team** (cryptography).

TECHNICAL SKILLS

Languages: Python, MATLAB, R, Go, JavaScript, C#, C++

AI/ML: LangChain, LangGraph, DSPy, WandB, ChromaDB, PyTorch, CUDA, Triton

Security: BurpSuite, Kali Linux, Wireshark, Nmap, PwnTools, Volatility

Frameworks/Databases: React, FastAPI, Flask, MySQL, PostgreSQL, Redis

Tools: Docker, Git, VS Code, PyCharm