Jovan Cvijanović

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Education

Faculty of Technical Sciences, University of Novi Sad – Software Engineering   2023 – 2027 (expected)

ML & AI Projects

word2vec – CBOW & Skip-Gram with Negative Sampling | *Python, NumPy*   **GitHub**

- Implemented **CBOW and SGNS from scratch in pure NumPy** — no ML frameworks — with full training loop, negative sampling, sub-sampling of frequent words, and learning rate decay.
- Evaluated on **Google analogy** (19k questions) and **WordSim-353**; best results: **44.2% analogy accuracy** (CBOW) and **Spearman ρ = 0.731** (SGNS) on text8.
- Built an interactive **REPL for nearest-neighbour queries and vector arithmetic**, a **W&B sweep** for hyperparameter search, pretrained embedding releases, and a **pytest test suite**.

Interia – AI-Powered Room Redesign | *React, TypeScript, Three.js, Sentence Transformers, FastAPI, Vercel*   **GitHub**

- Built the **React frontend** with interactive 3D point cloud visualization (Three.js), video upload, and real-time furniture replacement previews.
- Developed a **furniture data pipeline** over a 45,000+ product catalog and implemented **semantic search (RAG)** using sentence transformers for intelligent product matching.
- Managed **deployment infrastructure** on Vercel with Docker-based GPU backend.

CodeRAG | *RAG, LangChain, OpenAI, Hugging Face, CLI*   **GitHub**

- Built a **RAG-based QA system for codebases** with configurable retrieval (top-k, chunk sizing) and support for multiple embedding backends (OpenAI, Hugging Face).
- Improved **Recall@10 from 63.7% to 88.8%** through LLM-generated code summaries, enriched metadata, and embedding/chunking tuning.
- Implemented an **agentic generation graph** with retrieval grading, query rewriting on failure, hallucination checking, and out-of-scope handling.

gviz – Graph Visualizer | *Python, Django, D3.js, Plugin Architecture*   **GitHub**

- Architected the **core platform and abstract plugin API** in a 4-person team, defining the interfaces all plugins implement and building the plugin management, workspace, and graph filtering systems.
- Developed the **first data source plugin** (JSON format with cyclic structure support) and designed the **complete UI layout** in Django that teammates extended with additional functionality.

Lavugio – Ride-Sharing Platform | *Java, Spring Boot, Angular, PostgreSQL, WebSocket, Leaflet, JWT*   **GitHub**

- Developed **backend services and repositories** in Spring Boot for a full-stack Uber-like application built in a 3-person team.
- Built **frontend features** in Angular including real-time WebSocket chat, push notifications, and live map tracking with Leaflet.
- Developed the **Android companion app** in Java with Material Design 3.
- Wrote **unit and E2E tests** with JUnit, Jasmine, and Selenium.

Experience

Freelance C++ Tutor

- Conducted 1-on-1 lessons in C++ covering core language features, memory management, and object-oriented programming.

Non-Industry Relevant Experience

Mediterranean ML Summer School 2025 – Participant   Split, 08–12 September 2025

- Selected as one of **300 participants** out of ~1700 applicants.

Competitive Programming Task Author   2024 – Present

- Designing algorithmic problems and organizing competitive programming competitions in Bosnia and Herzegovina.
- Co-authoring a **training syllabus** covering algorithms and data structures for national-level competitors. **Link**

Awards

Garaža Frontier Hackathon (Belgrade, Serbia) – **1st place, $10,000 prize** December 2025
- Won with **Interia**, an AI-powered room redesign app; 48-hour hackathon with 30+ competing teams.

National Olympiad in Informatics (Republic of Srpska) – **1st place** 2022

Mathematical Grammar School Cup (Belgrade) – **Bronze Medal** in programming 2020