ALEXANDRU ARITON

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ACHIEVEMENTS

Romanian College Programing Contest, National Phase, 5th place, *March 2023*
Innovation Labs, finalist, 2023
South Eastern European Mathematical Olympiad, silver medal, *March 2023*
Apple Swift Student Challenge, winner, *June 2021-2022*
Romanian National Mathematical Olympiad, 5th place, *2019*

EXPERIENCE

TJENI Digital Justice Hackathon – **Romanian Team**   November 2023
Paris, France

- Won 2nd place out of 6 countries' teams. Used **Elastic Search** together with custom **word embedings** to generate an easier-to-search and smarter version of the Cyprus bar Association database. Together with the law part of our team devised a unique solution for the categorisation of each paragraph of a Judicial Decision. Used 7 **LegalBERT** models tuned with **LoRA** to assign a keyword to each paragraph.

Software Engineering Intern   Summer 2023
Center of Quantum Networks
Julia Summer of Code, Collaboration between MIT and UMass Amherst and University of Arizona

- Implemented double and simple selection purification circuits in Julia
- Implemented **EXPEDIENT** and **STRINGENT** circuits
- Helped with a development of a wrapper library over **MakieJL**, that makes writing UI easier

EDUCATION

Bachelor of computer engineering, Politehnica University   2022 - 2026
Relevant Courses: Operating Systems, Algorithm Analysis, Numerical Methods, Programming with Assembly, Advanced Algebra and Mathematical Analysis.

PROJECTS

Lambda Function Loader in C   https://github.com/Barosandu/HackathonSOAritonx2.git
Won 3rd place at an operating systems hackathon by implementing dynamic library loading and function execution through a client-server model. Leveraged UNIX sockets, pipes, signal and salarms, as well as parallelization for communication and efficient error handling.

Tesseract 4D   https://github.com/Barosandu/Tesseract4D.git
Used ray-marching in **MetalKit** directly on the GPU to build a software that plots sections of 4D objects passing through 3D space. Won the **Apple Swift Student Challenge** 2023 with this app.

Expression Parser in Rust   https://github.com/Barosandu/expression-parser.git
Implemented a simple expression parser and solver in Rust using reverse polish notation. I plan to expand it further by supporting function declarations.

Note taker   https://github.com/Barosandu/NoteTakerAppApp.git
Developed a note taking app in **Swift**. Improved stroke rendering performance and motion by using background processes and layer transforms.

SKILLS

- C, C++, Swift, ObjectiveC, Python, Angular, Flask, MetalKit, TensorFlow, PyTorch, Javascript, Typescript, Rust