ALEK PACHEMSKI

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About Me

As a Software Engineering student, I have built extensive experience in web and software development, creating intuitive digital products. My projects include a published Firefox extension, a real-time Kanban platform with Next.js and Firebase, and a Discord bot. Success in international hackathons highlights my collaboration, innovation, and ability to deliver under pressure. Beyond tech, rugby and powerlifting have shaped my discipline, teamwork, and resilience — traits that enhance my professional life.

Education

B.Sc. in Software Engineering and Information Systems — Skopje, North Macedonia
FINKI at Ss. Cyril and Methodius University of Skopje — *2020 – 2025*

"Orce Nikolov" High School — Skopje, North Macedonia
Bilingual High School Diploma — *2016 – 2020*

Experience

Piping Rock Club — New York, USA
Service Industry Professional – Work and Travel Program — *Jun 2022 – Oct 2022*

- Worked over 100 hours each week, showing a strong commitment to the job.
- Entrusted by management as a key organizer for major events due to demonstrated reliability and leadership.

GetOut.mk — Skopje, North Macedonia
Product Design and Business Development Associate — IT Startup — *May 2020 – Aug 2020*

- Designed product visuals for the B2B platform, improving user engagement and interface quality.
- Managed client outreach and contract negotiations, expanding business partnerships.

Projects

Zemi - Browser Extension — Add-ons Store | GitHub

- Bulk image downloader for messaging boards with smart hashing, image filtering, and custom download locations. Available on the Firefox add-ons store.
  Technologies: *JavaScript, Firefox Add-ons API, Content Security Policy*

Kanban Task Management Platform — GitHub

- Independently designed and built a fully-functional Trello-like real-time Kanban board with drag-and-drop, authentication, persistent state management and CRUD operations, detailed card views and commenting functionality.
  Technologies: *Next.js, Firebase, TypeScript*

Discord Bot — GitHub

- As part of a larger IoT plant care project, created a Discord bot that sends real-time push notifications for watering schedules, syncs with a remote server via API calls.
  Technologies: *Java (JDA), API Integration*

Real-Time Diabetes Prediction Pipeline with Apache Spark — GitHub

- Deployed a real-time ML pipeline that processes live health data streams using Apache Spark Structured Streaming, ingests data via Kafka, and applies optimized classification models for diabetes prediction.
  Technologies: *Python, Apache Spark, Kafka, Machine Learning*

Publications

Consumer Behavior Towards Eco-friendly products in the Western Balkans

Operational Research Paper *Nov 2024 – Jan 2025*

- Preprint paper accepted for presentation at the Mathematics and Application Conference (March 2025).
- Developed unsupervised clustering models using Eurostat socioeconomic data to identify and analyze groupings among Western Balkan countries, providing actionable policy insights based on quantitative results.
- Collaborated with professor Violeta Cvetkoska from the Faculty of Economics.

Enhancing Music Genre Classification: A Divide and Conquer Strategy

Machine Learning Research Paper *Aug 2023 – Feb 2024*

- Published at the ETAI Conference (Sept 2024), DOI: 10.5281/zenodo.14054137
- Developed a classical machine learning model for musical genre classification that leverages a layered model architecture for improved accuracy
- Collaborated with a student and professor Hristijan Gjoreski from the Faculty of Electrical Engineering

Skills

Programming Skills

- Proficient: JavaScript, Java
- Familiar: Python, TypeScript, Swift, SQL (MySQL, SQLite)
- Exposed to: C, C++

Frameworks & Technologies

- Next.js, Next.js, Docker, Git, SwiftUI, Bootstrap, Spark, Node.js, Bash, HTML/CSS

Languages

- Macedonian (Native), English (Professional), German(Elementary)

Awards & Achievements

Blaise Pascal Quantum Challenge

GitHub

Second Place *at International Level* *Feb 2025 – March 2025*

- Achieved **2nd place** among 850+ participants across 126 teams in an international quantum AI competition organized by Pasqal to develop sustainable solutions aligned with the UN Sustainable Development Goals (SDGs).
- Collaborated in an interdisciplinary team of 6 to develop a quantum-enhanced real-time wildfire containment algorithm
- Combined neural network predictions with QUBO-based quantum optimization to enable efficient resource allocation in wildfire scenarios.

T.I.M.E.S Tournament for Management and Engineering Skills

First Place *at National Level* *Jan 2024 – June 2024*

- A student-level case study competition organized by MIKROSAM and ESTIEM for Industrial Engineering and Management.
- Our team advanced to Izmir, Turkey for the semi-finals where we competed with teams from all over the world and placed **6th**
- Worked within a limited time-frame to analyze industrial line problems and provide optimal solutions.

UNIJA Challenge

Second Place *at National Level* *Nov 2023*

- A student-level software engineering competition for the development of a mobile application organized by UNIJA
- Designed the system architecture and collaborated with the other team members to develop the complete SRS document for an accounting mobile application