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 — *Sep 2016 – Jun 2020*

Work 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*

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*

- Pre-print paper accepted for presentation at the **Mathematics and Applications 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 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: JavaScript, TypeScript, Node.js, Swift, C, C++, Java, Python, MySQL, SQLite
Frameworks: Next.js, Nest.js, SwiftUI, Bootstrap, Django, Spark
Technologies: Git, Docker, Unix, Bash, UML, YouTrack, Jira
Languages: Macedonian (Native), English (Professional), German (Elementary)

Awards & Achievements

Blase Pascal Quantum Challenge - Finalist

GitHub ↩

Month Long Quantum AI Hackathon *Feb 2025 - Ongoing*

- Selected as one of the top 15 teams from over 800 participants in an international quantum AI competition organized by **Pasqal** ↩ to develop sustainable solutions aligned with the UN Sustainable Development Goals (SDGs). The team advances to the pitch phase on 11th March. Final phase on 26th March.
- Collaborated in an interdisciplinary team of 6 to develop a quantum-enhanced real-time wildfire containment algorithm, leveraging neural network-based predictions and QUBO-based optimization for efficient resource allocation.

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

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

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

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

TUM.ai AI4SocialGood Hackathon

48H Hackaton by Technical University Munich *Apr 2022*

- Worked with students from Europe to develop a solution for combating ”doomscrolling”