

# Muhammad Al Farizi

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## EDUCATION

### Eötvös Loránd University (ELTE)

B.S. in Computer Science | GPA: 4.71/5.00 | Credits: 234/180

Budapest, Hungary

Sep 2022 – Feb 2026

- **Thesis:** Visual Quantum Circuit Partitioner
- **Awards:** Stipendium Hungaricum Scholarship, Excellence Award in STEM+, 2× QNL Research Scholarships
- **Coursework:** AI Applications, Machine Learning, Probability & Stats, Data Structures & Algorithms, DBMS
- **Leadership:** Google Developers Group Technical Lead (organized DevFest 2025 AI Conference & Student Starter Pack), Data Science Club Founding Mentor (teach ML evaluation and mentor student projects)

## EXPERIENCE

### Junior Software Engineer, Quantum Computing Research

Apr 2025 – Jan 2026

Quantum Information National Laboratory

Budapest, Hungary

- Developed 4 graph-based optimization algorithms (Kahn's, ILP, TDAG, GTQCP) in Python using constraint satisfaction and ILP solvers (Gurobi/PuLP), outperforming IBM Qiskit and BQSKit in partition quality & runtime
- Built end-to-end data processing pipelines integrating Python optimization models with the SQUANDER library, automating benchmarking and evaluation workflows across diverse input configurations
- Designed modular C++/Python codebase with CMake and CPython bindings, eliminating 94.2% of legacy code (10,702 lines) with CI/CD integration on Rocky Linux

### Full Stack Engineer Intern

Feb 2025 – Nov 2025

ELTE Faculty of Informatics – TMS (Task Management System)

Budapest, Hungary

- Shipped 16 production features end-to-end across React/TypeScript frontend and REST API backend in an Agile environment, serving 3,000+ concurrent users during live coding examinations
- Configured Docker-based deployment infrastructure with environment-aware container isolation, resolving 6 cross-environment conflicts and delivering zero-downtime CI/CD releases across development and production

### Teaching Instructor, OOP & Programming Technology

Feb 2025 – Jan 2026

ELTE Faculty of Informatics

Budapest, Hungary

- Redesigned the international Object-Oriented Programming (OOP) curriculum with hands-on Java labs and iterative feedback loops, driving pass rates from 40% to 92.5% across 270+ students
- Taught 5 weekly contact hours covering software architecture, design patterns, and testing strategies to 30 students, delivering live coding demonstrations and evaluating project-based assignments in Java (Swing/AWT)

## PROJECTS

### Agentic Writing Assistant | LangGraph, LangChain, ChromaDB, FastAPI, React, OpenAI API

2025

- Designed 6-agent orchestration pipeline (Research, Writing, Personalization, Refiner, QA, Gap Analyzer) using LangGraph state machines with conditional routing for autonomous professional content generation
- Implemented RAG pipeline with ChromaDB vector database, semantic search, and cosine similarity scoring for dynamic context injection and user voice matching

### Agentic Quiz Generator | FastAPI, OpenAI API, Multi-Agent Systems, Prompt Engineering

2025

- Built an autonomous 3-agent system (Generator, Evaluator, Augmenter) with 10+ tool bindings that plans topic coverage, generates questions, classifies errors, and fills coverage gaps, serving 65+ active users
- Implemented structured LLM-based evaluation workflows with error classification, pedagogical analysis, and adaptive question augmentation to maintain style consistency across generated content

### Qubit – Quantum Circuit Platform | FastAPI, React, TypeScript, MongoDB, WebSocket, D3.js, Docker

2025

- Developed a cloud-native full-stack application with drag-and-drop composer (30+ gates), bidirectional OpenQASM 2.0 editor, real-time WebSocket streaming, JWT/OAuth auth, and interactive D3.js/Plotly dashboards

## TECHNICAL SKILLS

**Languages:** Python, JavaScript/TypeScript, Java, C/C++, C#, SQL, PHP, Shell Scripting

**AI/ML:** LangChain, LangGraph, Multi-Agent Systems, RAG, LLMs, NLP, Prompt Engineering, OpenAI API, GenAI

**Frameworks & Tools:** FastAPI, React.js, Docker, Kubernetes, Git, CI/CD, REST APIs, Microservices, Jira

**Data & Cloud:** ChromaDB, MongoDB, MySQL, PostgreSQL, Oracle, AWS, Azure, Vector Embeddings, Agile/Scrum