Ijtihed Kilani

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Education

Aalto University Aug 2026 – Jun 2028

MSc in Pure Mathematics, Minor in Algorithms & Theoretical Computer Science

Aalto University Aug 2024 – June 2026

BSc in (Computational) Mechanical Engineering, Minor in Computer Science *Graduating in 2 years instead of 3*

Experience

Founding Software Engineer Nov 2025 – Present

Kova Labs *Helsinki, Finland*

- **#2 Hire leading simulations & digital-twin** at a Lifeline VC-backed startup building drone autonomy.
- Managing autonomy and perception pipelines in **C++/Rust**, integrating into a Unity/TS sim with ROS2 interfaces.
- Deployed to a physical drone and cut localization error 0.35 m→0.12 m and failures 2.0/min→0.8/min with math optimization.

Software Engineer Mar 2025 – Nov 2025

Sensofusion *Helsinki, Finland*

- Joined at age 17 the fastest growing anti-drone startup in Europe as **lead simulations engineer**.
- Shipped an end-to-end drone simulator (TS + Three.js, Python/C++ backend) with hand-optimized 3D assets.
- Reduced cold start **from 15 s→2.5** s and improved **FPS 30→60** via lazy loading/reducing per-frame allocations.

Research Assistant Nov 2025 – Present

Aalto University, Computational Behavior Lab *Espoo, Finland*

- Reproduced Physical AI **NeurIPS 2024** CooHOI baselines with **GPU-parallel simulation** using PyTorch/CUDA.
- Building a Unity OpenXR ↔ Isaac Gym bridge to stream real-time VR human motion for human-in-the-loop policy evaluation.

Teaching Assistant Sep 2025 – Jan 2026

Aalto University, Department of Computer Science *Espoo, Finland*

Research Intern Jun 2023 – Aug 2023

Institute of Mathematics and Informatics *Varna, Bulgaria*

- Built a **graph search engine** for combinatorial tasks using **A*** in **Python/C++** with state modeling and pruning.
- Built result caching, lowering exploration by **70%** and improving runtime by **3**× on very large instances.

Projects

Self-Hosted Home Server (Lab) | *Debian 13 (KVM), Ollama, CUDA, WebUI, Tailscale, systemd*

- Deployed a private, GPU-accelerated local LLM stack with a self-hosted UI and VPN-secured remote access (Tailscale + SSH).
- Served quantized long-context models with tool/function calling eg. (Llama 3.1 & Qwen2.5-Coder) managed as a systemd service.

Real-Time Physics (Dynamics) Engine | *C++, ROS2, Unity, gRPC/WebSockets*

- Built a custom **C++ terrain / vehicle dynamics simulator** (rigid-body contact, friction, slopes) w/ deterministic scenarios.

Physical Race-Car Suspension Bracket | *Python, Ansys, Finite Element Methods, Post-Processing*

- Built an automated simulation + topology-optimization workflow for a **physical race-car** suspension bracket.
- Turned solver outputs into a **manufacturable 3D model**, cutting weight by **25%** & meeting stiffness targets w/ on-car validation.

Agentic AI Clinical Scribe | *Next.js, Python, Wispr Flow, OpenAI API, SQLite, TypeScript/JavaScript*

- Built under 24 hours a real-time clinical scribe using Next.js + Tailwind and a FastAPI/WebSockets backend at HackMIT '25.

Awards and Achievements

National Olympiad for Programming (KSA), #1 / 280,000 participants 2024

1st round; Featured on local + national news. Speaker at events.

World Robotics Olympiad ('22 & '23), 2x Silver + 1x Bronze (#2, #4 & #5 / 2,500+) 2023

Built fully custom PCB board used by AI-powered autonomous physical health assistant (mobile robot).

Technical Skills

Languages: Python, TypeScript, C++, C#, Rust

Tools/Tech: React, Node.js, Flask, SQL, WebSockets, PostgreSQL, Docker, GitHub Actions, Linux, Git, AWS, Google Cloud

Coursework: Data Structures and Algorithms, Parallel Computing, Linear Algebra, Databases