

# Ijtihed Kilani

portfolio: [ijtihed.com](https://ijtihed.com)

+358 41 740 8918 | [ijtihed.kilani@aalto.fi](mailto:ijtihed.kilani@aalto.fi) | [linkedin.com/in/ijtihed](https://linkedin.com/in/ijtihed) | [github.com/Ijtihed](https://github.com/Ijtihed)

## 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 Engineering, Minor in Computer Science*

*Graduating in 2 years instead of 3*

## EXPERIENCE

### Founding Software Engineer (Autonomy)

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.

### Research Assistant

Nov 2025 – Present

*Aalto University, Computational Behavior Lab*

*Espoo, Finland*

- Reproduced **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.

### 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.

### Teaching Assistant

Sep 2025 – Dec 2025

*Aalto University, Department of Computer Science*

*Espoo, Finland*

### Research Intern

Jun 2023 – Aug 2023

*Bulgarian Institute of Mathematics and Informatics*

*Varna, Bulgaria*

- Implemented graph-based search in **Python/C++** (state modeling + pruning) for **math-olympiad problems**.

## 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.

### AI Agent 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