

# Ijtihed Kilani

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## EDUCATION

### Aalto University

Bachelor of Science in Computational Engineering, Minor in Computer Science

Espoo, FI

Aug. 2024 – Current

## SKILLS AND TECH STACKS

**Programming Languages:** Python, C#, Dart, JavaScript (ES6+), HTML, CSS

**Frameworks and Libraries:** Flask, Unity, OpenCV, TensorFlow, PyTorch, Jinja2, Bootstrap, TailwindCSS, React

**Tools and Platforms:** Git, Docker, PocketBase, Google Cloud, VSCode, Unity Editor

**Version Control:** Git (GitHub)

**Relevant Coursework:** Data Structures and Algorithms, Software Engineering, Number Theory

## EXPERIENCE

### Research Assistant

Dec 2022 – May 2024

King Abdulaziz University, Biotechnology

Jeddah, Saudi Arabia

- Analyzed genetic (SNP) and hematological (CBC) data from 2,200+ patients, identifying altitude-specific molecular and physiological hypoxia adaptations.
- Authored 3 peer-reviewed publications on genetic clustering and hematological variations.
- Mentored 5 researchers and led a team in experimental design, data analysis, and biotechnology R&D.

### Research Intern

Jul 2023 – Aug 2023

23rd Summer Research School in Mathematics & Informatics, Computer Science & Applied Math

- Worked on a preprint (under Dr. Stanislav Harizanov) applying informatics, like formulation of recursive relations representing paths in problems & used optimizations like rolling arrays to reduce space complexity to *linear time*.
- Modeled the problem as a Directed Acyclic Graph (DAG)  $G(V, E)$  with the common adjacency matrix.
- Delivered presentations on the results to an academic audience of 30+ PhDs.

## PROJECTS

### The Yappin' Spirit | C# (.NET), Unity, Python (OpenCV, DeepFace, Flask), Blender, HLSL

- Developed a real-time emotion detection game integrating OpenCV with Unity to capture and analyze player emotions via webcam.
- Implemented facial recognition algorithm for interactive gameplay which allows response based on emotions.
- Deployed the game entirely on itch.io and presented it in a hackathon to 20+ participants and organizers.

### Maze Maverick | C# (.NET), Unity, Blender

- Developed and deployed a 3D arcade game inspired by "Pac-Man" to Steam, with procedurally generated mazes, and multiple game modes.
- Implemented a finite state machine (FSM) for enemy AI which allows ghosts to exhibit complex behaviors such as patrolling, chasing, and evading.
- Integrated Unity's post-processing stack for visual effects, including bloom, ambient occlusion.

### Full Stack Web-app with Database and User Authentication | Python, PocketBase, JS, Bootstrap, CSS, HTML

- Deployed a Flask app integrating 'qrcode' and 'Pillow' for QR code generation, Base64 encoding, and image embedding with PocketBase for data persistence and Flask-Migrate for migrations.
- Implemented secure user authentication, session management, and an API for image downloads, with Jinja2 for dynamic templates and JS for real-time interactivity.

## PUBLICATIONS

**Comparative Study of Complete Blood Count Between High-Altitude and Sea-Level Residents** | *Cureus*, Sep 8, 2023 | **Second Author**

**Single Nucleotide Polymorphisms in HIF-1A, VEGFa, & VHL Genes** | *Advancements in Life Sciences*, March 6, 2024 | **Second Author**

**Comparative Study of the Factors Affecting the Microbiota Presence in the Human Nasal Cavity After Covid-19 Influence** | *Bioscience Research*, Nov 15, 2023 | **Third Author**