

Hala Mukheimer

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SUMMARY

I am currently a PhD student in Computer Science at University of Waterloo and part of Waterloo Advanced Systems Lab (WASL). My interests are in computer systems, networking, cloud computing, and systems for AI. I'm interested in understanding how systems can be designed to be more efficient, scalable, and reliable, particularly as computing workloads continue to evolve. With a background in Computer Engineering, I have experience in both hardware and software, as well as programming, algorithms, and system design. I enjoy working on challenging technical problems, learning new technologies, and building systems that solve real-world problems.

EDUCATION

Ph.D. in Computer Science – University of Waterloo, ON, Canada (*May 2026 – Present*)

- Supervisor: Prof. Samer Al-Kiswany
- Group: Waterloo Advanced Systems Lab (WASL)

B.Sc. in Computer Engineering – University of Jordan, Amman, Jordan (*Oct 2020 – July 2025*)

- Thesis Title: Autonomous UAV Path Planning in AirSim Using Reinforcement Learning
- Supervisor: Dr. Ashraf Suyagh
- GPA: 3.66/4 (Excellent)

EXPERIENCE

Graduate Research and Teaching Assistant – University of Waterloo, ON, Canada (*May 2026 – Present*)

- Collaborators: Prof. Samer Al-Kiswany and WASL members

ASIC Verification Intern – Golden Electronics, Amman, Jordan (*March 2025 – May 2025*)

- Designed and validated digital logic designs using Verilog while developing simulation testbenches to verify functional correctness and isolate edge-case bugs.

Social Media Designer – Deanship of Student Affairs, University of Jordan (*July 2022 – Sept 2022*)

PUBLICATIONS

[1] "Empirical Evaluation of Proximal Policy Optimization for UAV Navigation in Constrained Indoor Environments." Ashraf Suyyagh, Tasneem Al-Qat, **Hala Mukheimer**, Adham Alsharkawi, and Asma Abdel Karim, IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT), 2026.

SELECTED RESEARCH & TECHNICAL PROJECTS

Pre-Processing Guardrails for Emoji-Based Adversarial Jailbreak Defense in Large Language Models

- Course: Advanced Topics in Artificial Intelligence Course (CS886), University of Waterloo

- Proposed a model-agnostic pre-processing guardrail framework that converts emoji inputs into text descriptions, successfully mitigating emoji-based jailbreak vulnerabilities across diverse LLM architectures.

AI-Assisted Lab Summaries: Progressive Disclosure Interfaces for Patient Health Portals

- Course: Human-Computer Interaction (CS649), University of Waterloo
- Formulated a research proposal for a progressive disclosure patient portal interface designed to present complex lab results with multi-tiered AI explanations to improve medical comprehension.

Autonomous UAV Path Planning in AirSim Using Reinforcement Learning

- Graduation Project, University of Jordan
- Evaluated a PPO-based reinforcement learning approach in AirSim for indoor UAV navigation in cluttered warehouse environments, analyzing reward shaping, hyperparameter sensitivity, and obstacle density constraints.

Element Search HLSM & Digital Processor Architecture (*Advanced Digital Design*)

- Coursework, University of Jordan
- Designed a High-Level State Machine (HLSM) for array element retrieval in SystemVerilog alongside a 5-stage pipelined Verilog processor featuring hazard detection and data forwarding.

VOLUNTEERING

Zenon – Electrical and Computer Engineering Academic Committee, University of Jordan

- President (*June 2022 – Oct 2023*)
- Social Media Team Leader (*Oct 2021 – April 2022*)
- Team Member (*July 2021 – July 2025*)

Ask Me About Engineering – Engineering Academic Committee, University of Jordan

- Social Media Team Leader (*April 2022 – Oct 2022*)

Ahl Al Hemmeh – University of Jordan

- Lead Photographer (*Oct 2021 – Sept 2022*)

LANGUAGES

- **Arabic** – Native
- **English** – Fluent (PTE Score: 90/90)