

Ahmad Khan

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Education

ETH Zürich

M.Sc. IN COMPUTER SCIENCE

- Specialization in Artificial Intelligence

Zürich, Switzerland

Sep. 2023 - Nov. 2025

Carnegie Mellon University in Qatar

B.Sc. IN COMPUTER SCIENCE (3.93/4.0)

- Awarded Qatar Foundation Scholarship

Doha, Qatar

Aug. 2017 - May. 2021

Work Experience

IBM Research

MACHINE LEARNING ENGINEER (MASTER'S THESIS)

- Investigating aggressive model compression for on-premise deployment of custom LLMs for clients.
- Finetuned a llama 7B model with ternary quantization while minimizing loss in performance through the use of few carefully selected full-precision weights.

Zürich, Switzerland

May. 2025 - Present

IVIA Lab - ETH Zürich

SOFTWARE ENGINEER (PART-TIME)

- Set up FastAPI backend and Azure pipelines for a system to connect students with industry partners for thesis/internships.
- Enabled authentication and authorization including SSO for ETH users through Keycloak integration.

Zürich, Switzerland

Aug. 2024 - May 2025

Qatar Computing Research Institute

SOFTWARE ENGINEER

- Built MVP solutions for various commercialization efforts of research projects at QCRI.
- Mentored and managed 6 interns.

Allama - GPT based chatbot using Langchain on Qatar ministry data

- Set up a pipeline to automatically crawl, parse, embed, and populate data into vector DB to keep chatbot up to date.
- Configured CI/CD using Azure Pipelines and Docker Swarm.

JUDO - Web-based interactive traffic microsimulation based on SUMO 1

- Built web-based visualization of SUMO simulations, including various performance critical features such as visual clustering of vehicles, frame dropping, and intelligent memory management to avoid buffering, achieving smooth 30fps with over 1 million vehicles.
- Dockerized QarSUMO and created an API to access it to ease deployment and scalability.

SIHA - platform to extract, unify, and provide health data from various wearable devices

- Took ownership of the SIHA mobile app, migrating it to null-safety and BLOC architecture pattern, and developed new Team Competitions feature.
- Implemented a YAML interface for TASRIE, an open-source tool for processing time-series data.
- Created an on-premise deployment script for SIHA that pulls all the relevant images from MS azure, allowing deployment without loading sensitive code.

Doha, Qatar

Oct. 2021 - Sep. 2023

Quickbyte

SOFTWARE ENGINEER

- Built an admin dashboard for managing restaurants and menus using React and NodeJS to streamline previously manual processes, removing developer interventions entirely.
- A/B tested and implemented group ordering and chat based ordering features.
- Created indexes in MongoDB to optimize DB queries, reducing query times by 12x.

Doha, Qatar

Dec. 2020 - June. 2021

Carnegie Mellon University

RESEARCH ENGINEER

- Worked with Professor Ihab Younis, filling computational biology support for various projects and students under the lab.
- Built a dashboard for visualizing data generated from breast cancer databases using React, NodeJS and MongoDB. The dashboard was part of a deliverable for the lab's research grant.
- Compiled a database on Minor Intron Containing Genes (MIGs) to help investigate their role in regulating oncogenes. This includes computational prediction of how minor intron retention impacts protein synthesis using an automated process which generated reliable data, as opposed to traditional biology methods which are error-prone and time-consuming.
- Developed an RNA-Seq pipeline using Nextflow that performs read alignment, mapping, and calculates gene abundance for analyzing lab-generated data.

Doha, Qatar

Jan. 2013 - Feb. 2013

Projects

Curiosity: Analyzing Human Questioning Behavior and Causal Inquiry through Curiosity-Driven Queries

SUBMITTED TO EMNLP FOR REVIEW. PREPRINT AT [HTTPS://ARXIV.ORG/PDF/2405.20318](https://arxiv.org/pdf/2405.20318)

2025

- Introduced the history of web technology and the JAM stack which is for the modern web application development.
- Introduced how to freely host the web application with high performance utilizing global CDN services.

Loss of Plasticity in Recurrent Models

CODEBASE AVAILABLE AT [HTTPS://GITHUB.COM/MAK2508/RECURRENT-LOP](https://github.com/MAK2508/RECURRENT-LOP)

2025

- Explored the existence of Loss of Plasticity in Recurrent models and evaluated the effectiveness of mitigation strategies.

Exploiting Backdoor Vulnerabilities in Communication Based Multi-Agent Reinforcement Learning

CODEBASE AVAILABLE AT [HTTPS://GITHUB.COM/MAK2508/RECURRENT-LOP](https://github.com/MAK2508/RECURRENT-LOP)

2024

- Explored backdoor vulnerabilities in communication based CMARL systems, specifically a traffic environment.
- Showed that a trigger can be inserted inside a message sent by agents in communication-based MARL.

A Probabilistic Implementation of Rational-Speech-Act Framework for Presupposition

CODEBASE AVAILABLE AT [HTTPS://GITHUB.COM/MAK2508/PROB_RSA](https://github.com/MAK2508/PROB_RSA)

2024

- Implemented RSA using pyro for greater scalability of example worlds that can be modeled.

Honors & Awards

2021	Andrew Carnegie Society Scholar , Carnegie Mellon University	Pittsburgh, U.S.A
2021	Qatar Campus Scholar , Carnegie Mellon University in Qatar	Doha, Qatar
2021	Student Leadership Award with Distinction , Carnegie Mellon University in Qatar	Doha, Qatar
2020	Best Design award , CarnegieApps Hackathon	Doha, Qatar
2019	First Place , Oman Collegiate Programming Competition	Muscat, Oman
2019	First Place , CMUQ Programming Competition	Doha, Qatar
2019	First Place , Qatar University Cybersecurity Competition organized by Thales	Doha, Qatar
2018	Best Technology Prize , CarnegieApps Hackathon	Doha, Qatar
All Semesters	Dean's Honors List , Carnegie Mellon University in Qatar	Doha, Qatar

Leadership

Carnegie Mellon University in Qatar

Doha, Qatar

HEAD ORIENTATION COUNSELOR

Jun. 2020 - Aug. 2020

- Designed and delivered online orientation for 130 incoming students, centralizing resources for academic and campus life.
- Led the first cross-campus orientation event to facilitate broader Education City community building, partnering with 3 other universities.
- Introduced Tartan Bridge Buddies initiative: 1:1 pairing between first-years and upperclass mentors.
- Planned and facilitated training for 70 orientation volunteers focused on effective communication and student support.

Carnegie Mellon University in Qatar

Doha, Qatar

TRIP LEADER FOR ENVIRONMENT SERVICE PROJECT

Sep. 2019 - Mar. 2020

- Managed ~ \$22k budget; led 9-student service-learning project under Tartans Without Borders initiative.
- Drove campus engagement through outreach campaigns; achieved 60 applications (record for TWB).
- Led pre-departure training on ethical volunteering and teaching practices.

Carnegie Mellon University in Qatar

Doha, Qatar

CS SOCIETY PRESIDENT

Aug. 2019 - May. 2020

- Hosted alumni talks and social events to strengthen the CS community.
- Co-led a GameDev hackathon in partnership with alumni.