

# Mhd Saria Allahham

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## SUMMARY

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I am an AI/ML Research Engineer with more than 4 years of experience in AI and research, and a strong background in telecommunications systems and engineering. My experience spans the development, fine-tuning, and deployment of Large Language Models (LLMs), Generative AI, Computer Vision, Data Science, and MLOps. I spent a year and a half working for Samsung Research America, AI Center in Montreal, engaging in a variety of projects for wireless communications, indoor human-state estimation and localization, home automation, and LLMs. A proven track record in both academic research and industry projects demonstrates my capacity to bridge the gap between theoretical AI/ML research and real-world applications.

## EDUCATION

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### Queen's University

Kingston, ON, Canada

*M.Sc. in Computer Science; GPA: 4.30/4.30*

*Jan 2021 – Apr 2022*

**Thesis:** Multi-Orchestrator Mobile Edge Learning: Designing Energy-Efficient Task Allocation and Incentive Schemes

### Qatar University

Doha, Qatar

*B.Sc. in Computer Engineering GPA: 3.90/4.00*

*Jan 2016 – Apr 2020*

*Graduated with High Order of Excellence*

**Senior Project:** Designing a Smart Home Controller for Smart Home Devices using Hand Gestures

## JOB EXPERIENCE

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### Samsung Research America, AI Center

Montreal, QC, Canada

*AI/ML Research Engineer*

*Oct 2022 – Feb 2024*

- Developing, deploying, and testing AI algorithms on real hardware and simulations
- Leveraging the deep research work and findings to develop and program integrated software algorithms to solve real-world problems
- Translating mathematical and algorithmic problem specifications into efficient deployable code.
- Developing and proposing new project ideas.
- Writing scientific papers for publication and patents.
- Engaging with Samsung business units to develop new ideas that can have business impact.

### Queen's University, School of Computing

Kingston, ON, Canada

*Graduate Research Fellow*

*Jan 2021 – Sep 2022, Part-time*

- Modeling and analyzing Federated Learning at the network edge for resource-limited smart devices.
- Developing energy-efficient protocols for Federated Learning.
- Writing and reviewing research articles.

### Qatar's University, Computer Science and Engineering Dep.

Doha, Qatar

*Research Assistant*

*May 2020 – Sep 2021, Full-time*

- Designing and implementing smart protocols using AI for Ultra Reliable Low Latency Communication (URLLC) in smart health systems.
- Reviewing and employing state-of-the-art smart algorithms for protocols.
- Writing and reviewing research articles.

## PROJECTS

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### Local 3GPP Chat

*Self-developed*

- **Summary:** A chatbot powered by Retrieval Augmented Generation (RAG) and a local LLM that gives information about ETSI and 3GPP standards.
- **Programming Languages:** Python
- **Relevant Software & Libraries:** PyTorch, Ollama, llama index, Transformers
- **Open-source version:** <https://github.com/saria-lh/3GPP-RAG-chat>

### 5G Mobile Wireless Networks Simulator with AI-based Load Balancing Algorithms

*Samsung Research America*

- **Summary:** A proprietary practical simulation software designed to simulate 5G Networks and AI load balancing algorithms.
- **Programming Languages:** Java, Python, MATLAB
- **Relevant Software & Libraries:** PyTorch, CVX/CVXPY, Stable Baselines3
- **Open-source version:** <https://github.com/saria-lh/MERLIN>

### AI-based Indoor Localization and Human State Estimation using Ultra-Wideband Protocol

*Samsung Research America*

- **Summary:** A proprietary framework that enables the estimation of location, activities, and the number of people in an indoor environment without requiring them to carry specific devices.
- **Programming Languages:** C/C++, Python, Java
- **Relevant Software & Libraries:** PyTorch, OpenCV, ROS, Docker

## SKILLS & EXPERTISE

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### Software Development

- **Programming Languages:** Python, MATLAB, C/C++, Java, and Bash scripting
- **Machine Learning and Data Science:** SciPy, Pandas, NumPy, SciKit-Learn, Pandas, XGBoost, Matplotlib and Seaborn.
- **Deep Learning:** PyTorch, Tensorflow/Keras, and OpenCV.
- **MLOps:** LightningAI, Weights & Biases, and Azure ML
- **Docker**

### Artificial Intelligence

- Data Science and Machine Learning.
- Deep Learning.
- Computer Vision.
- Natural Language Processing (NLP).
- Large Language Models (LLMs).
- Reinforcement Learning.
- Multi-Agent Systems.

### Telecommunications and Computer Networks

- Digital Signal Processing.
- Edge networks.
- Internet of Things (IoT).
- TCP/IP network stack.
- Wireless and Cellular Networks.
- Reading 3GPP standards and implementing functionalities.
- Digital twins, simulation and experimental analysis for telecommunication systems.

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