

Mohammad Hussain

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SUMMARY

ML researcher and engineer experienced in building data ingestion, validation, training, and evaluation workflows for large imaging and simulation datasets. Developed real-time sensor-streaming systems, edge inference pipelines for NVIDIA Jetson and ESP32, and parameter-efficient neural architectures with measured throughput gains.

TECHNICAL SKILLS

Programming & Systems: Python, C++, SQL, MATLAB, Linux

Data Infrastructure: Data ingestion and validation, dataset merging, ETL-style pipelines, experiment and evaluation workflows, DICOM processing, real-time sensor streaming

ML & Retrieval: PyTorch, TensorFlow, Scikit-learn, Hugging Face, RAG systems, reinforcement learning, Transformers, GRU/LSTM

Edge & Vision: NVIDIA Jetson, ESP32, TensorFlow Lite, OpenCV, SimpleITK, YOLOX, Flask, Socket.IO

EXPERIENCE

Koç University – Wireless Networks Laboratory

Graduate Research Assistant, Advisor: Prof. Sinem Coleri

Istanbul, Turkey

Oct 2025 – Present

- Developing AI-driven O-RAN resource-allocation systems with Turkcell and Opticoms, using 3GPP TR 38.901 and QuaDRiGa channel data for model training and evaluation across LOS, NLOS, and mixed-condition scenarios.
- Designed a GRU encoder with attention, gated feature fusion, and a factorized projection head, reducing parameters by **26%** and increasing inference throughput by **2.3×** over LinFormer while achieving -13.84 dB NMSE.
- Building a hierarchical scheduling pipeline combining learned surrogate models, conformal demand bounds, convex optimization, and calibrated execution-time safety checks for latency-sensitive URLLC/eMBB workloads.

Radiologics

Medical Imaging and AI Intern

Remote

Jul 2025 – Oct 2025

- Built CT processing and nnU-Net v2 segmentation pipelines for **44 anatomical structures**, from DICOM conversion through geometry-preserving export.
- Developed skeletal-muscle segmentation workflows for 90 L3-centered CT volumes with tissue- and bone-aware mask reconstruction.
- Trained YOLOX detectors on **50K** pediatric radiographs, improving recall by **5–10 points** with domain-robust augmentations.
- Built a QCT bone-density pipeline for artifact removal and HU-to-BMD calibration using Deming regression and Bland–Altman analysis.
- Automated rotated bounding boxes for 21 anatomical regions, optimizing 30+ geometric parameters over 300+ Optuna trials per rule.

Modern Technology Laboratories

ML / Embedded Systems Intern

Jeddah, Saudi Arabia

Aug 2024 – Sep 2024

- Deployed a lightweight CNN inference pipeline on an ESP32 for resource-constrained structural crack detection.
- Built PyTorch regression workflows for concrete-strength prediction, including preprocessing, training, and holdout evaluation.

SELECTED SYSTEMS PROJECT

Edge Vision & Real-Time Sensor Monitoring Platform

Bilkent University FYP

Industry Collaboration: KAREL | github.com/MHDoh/FYP

- Built a multi-channel analytics system deployable on NVIDIA Jetson or standard hardware, integrating five task-specific vision models with PyTorch, YOLO, OpenCV, and a PyQt5 operator interface.
- Designed a UART ingestion and processing pipeline for CO₂, temperature, humidity, pressure, and acceleration streams, including configurable thresholds and consecutive-anomaly detection.
- Implemented a Flask and Socket.IO data layer that streamed live metrics, anomaly records, and configuration updates between edge devices, a web dashboard, and a desktop client.

PUBLICATION

- M. Hussain**, M. Adibag, D. Gurer, G. Kalem, K. Serin, and S. Coleri, “Resource-Efficient CSI Prediction: A Gated Fusion and Factorized Projection Approach,” *IEEE Communications Letters*, 2026.

EDUCATION

Koç University

M.Sc. in Electrical and Electronics Engineering

Oct 2025 – Present

GPA: 3.57 / 4.00

Bilkent University

B.Sc. in Electrical and Electronics Engineering

Jun 2025

GPA: 3.27 / 4.00