Amirhossein (Amir) Moshtaghioun

Embedded AI & Robotics Engineer · LLM/RAG Systems · Industrial Automation

Regina, Saskatchewan, Canada | amir@roboticswith.me | roboticswith.me | linkedin.com/in/amir-moshtaghioun | github.com/amir1373

PROFILE

Embedded AI, robotics, and intelligent systems engineer with 9+ years of experience spanning embedded electronics, industrial automation, real-time control, computer vision, and applied AI. Builds complete systems from STM32/ESP32 firmware and multi-layer PCB design through ROS2 robotics, industrial perception, and LLM/RAG diagnostic workflows. Hardware-aware, deployment-focused, and comfortable across research and production environments. Authorized for full-time work in Canada. Eligible for APEGS Member-in-Training.

PROFESSIONAL EXPERIENCE

Computer Vision & Robotics Research Intern (NSERC IRC)

University of Regina

Mar 2025 – Present · Regina, SK, Canada (On-site)

- Developed computer vision pipelines for drone-based and robotic inspection systems, improving detection reliability under real-world lighting variation.
- Integrated camera and depth sensor nodes with ROS2-based robotic platforms for real-time perception in industrial environments.
- Designed validation protocols characterising perception pipeline failure modes under out-of-distribution conditions.
- Supported system testing and field validation, reducing deployment issues in industrial inspection environments.

ML Engineer Intern

Mitacs — MacDon Industries

Jan 2025 – Jan 2026 · Canada (Remote)

- Developed and trained machine learning models for industrial perception on agricultural machinery.
- Improved model precision through structured data preprocessing, augmentation, and iterative validation pipeline development.
- Collaborated with MacDon engineering teams to adapt research models toward production deployment constraints.

Instructor — Machine Learning with Python

Circuit Stream · Contract Part-time

Jul 2025 – Aug 2025 · Regina, SK, Canada (Remote)

- Delivered summer machine learning course covering Python, supervised learning, and applied ML workflows.

Embedded Systems & Robotics Engineer (Co-Founder)

Barman Afzar Fidar Co.

Jan 2021 – Dec 2024 · Yazd, Iran

- Co-founded robotics and embedded systems company; led engineering across firmware, hardware, and deployed robotic products.
- Designed embedded systems using STM32, AVR, and ESP32 microcontrollers, improving real-time performance and system stability.
- Developed FPGA-based processing modules (Xilinx Zynq), achieving ~40% latency reduction versus ARM-only baseline.
- Performed schematic capture and multi-layer PCB design in Altium Designer, improving signal integrity on high-speed interfaces.
- Developed PLC- and VFD-based automation systems using Siemens S7-1200 and TIA Portal for industrial motion control.
- Integrated EtherCAT and Modbus TCP/RTU for reliable real-time multi-axis coordination.
- Delivered industrial robotic arm systems, electromagnetic slag-detection platforms, and CNC automation tools to production.

R&D Manager — IoT Systems & Manufacturing

Gostaresh Internet Ashya Parsian Co. (IOTive)

Jul 2020 – Jun 2021 · Yazd, Iran (On-site)

- Led R&D and manufacturing transition for industrial IoT telemetry products based on STM32 and ESP32.
- Designed schematic and PCB for production-ready GSM/LTE and LoRa communication hardware.
- Shipped over 2,000 industrial monitoring devices with >99.99% operational uptime across industrial and medical applications.
- Optimised PCB layouts for manufacturability, improving production yield and reducing per-unit cost.
- Developed drywall process monitoring and capacitive moisture measurement systems for industrial clients.

R&D Specialist — Embedded & Automation Systems

Faraz Sanaat

Nov 2016 – Jul 2020 · Yazd, Iran (On-site)

- Developed embedded systems using AVR and ARM-based microcontrollers for industrial instrumentation and automation.
- Performed schematic capture and PCB design, achieving >99% hardware uptime across deployed systems.
- Designed and built automated alpha-particle beam measurement system for precision nuclear instrumentation.
- Developed VOD process gas analysis and monitoring system for stainless-steel manufacturing.
- Designed analog and digital circuits including power management subsystems.

EDUCATION

Master of Science — Industrial Systems Engineering

University of Regina, Canada

Jan 2025 – Expected Spring 2026 · Research: Computer vision and robotic inspection systems

Master of Science — Computer Engineering (AI & Robotics)

Yazd University, Iran

Oct 2017 – Dec 2020

Bachelor of Science — Electronics Engineering

Islamic Azad University, Iran

2012 – 2016

CORE SKILLS

Embedded & Real-Time Systems	STM32, AVR, ESP32, ARM Cortex, Embedded C/C++, RTOS, Edge AI, Sensor integration
Robotics & Autonomous Systems	ROS2 (Humble), Nav2, SLAM Toolbox, MoveIt2, Sensor fusion, PX4, Autonomous navigation
Computer Vision & ML	PyTorch, TensorFlow, OpenCV, YOLO, Mask R-CNN, Depth Anything V2, Optical Flow, Transformers
LLM / RAG & Industrial AI	Retrieval-Augmented Generation, Prompt engineering, Ollama, Knowledge grounding, Diagnostic expert systems
Electronics & PCB Design	Altium Designer, KiCad, Multi-layer PCB, FPGA (Xilinx Zynq), Vivado, Signal integrity, Bring-up
Industrial Automation	Siemens S7-1200 PLC, TIA Portal, WinCC, VFD tuning, EtherCAT, Modbus TCP/RTU, Industrial I/O
Software & Tools	Python, C/C++, Linux, Git, FastAPI, Next.js, Qt, Docker, CUDA

AWARDS & CERTIFICATIONS

- RoboCup 2014 — 1st Place Best-in-Class Manipulation & 1st Place Best-in-Class Small UAV (João Pessoa, Brazil)
- RoboCup Iran Open — 2nd Place
- Best Technology Student — Yazd University
- CELPIP-General: 11/12
- Eligible for APEGS Member-in-Training · Valid Saskatchewan Driver's Licence