

Ali Zahedi Mobini

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Profile

Experienced Electronics and Embedded Systems Engineer with a strong background in IoT and medical device development. My work focuses on the design of intelligent embedded and cyber-physical systems, particularly for smart home, smart city, and healthcare applications. I specialize in hardware/software co-design, real-time system integration, and secure communication protocols. Proficient in platforms such as STM32, ESP32, Raspberry Pi, and FPGA, with extensive experience in C/C++, RTOS, and GUI development using LVGL and TouchGFX. I aim to build scalable, intelligent, and adaptive embedded systems for next-generation connected environments.

Education

Islamic Azad University Science and Research Branch , Tehran, Iran	2021 – 2026
Master's degree in Digital Electronic Systems	
Shamsipour Technical College , Tehran, Iran	2018 – 2020
Bachelor's degree in Electronic Engineering	
Shahid Rajaee Technical and Engineering College , Kashan, Isfahan, Iran	2016 – 2018
Associate's degree in Electronic Engineering	

Research interests

- Smart Home Systems
- Smart City Technologies
- Cyber-Physical Systems
- Autonomous and Intelligent Embedded Systems

Experience

Freelance (Part-Time) , Tehran, Iran	Jun 2018 – Present
Worked on various IoT and biomedical projects, focusing on the development of embedded systems and PCB design.	
IMATT Group (Part-Time) , Tehran, Iran	Sep 2024 – Present
Contributed to developing medical devices for cancer diagnosis and pathology, specializing in imaging and hardware integration.	
Sedna (Full-Time) , Tehran, Iran	May 2024 – Aug 2024
Improved firmware and PCB designs for existing products and spearheaded the development of new devices.	
Smart Apex (Full-Time) , Kashan, Iran	Nov 2021 – Mar 2023
Updated firmware for products deployed to improve performance and reliability, designed and implemented DALI modules for advanced lighting control systems, and developed remote IR modules for smart air conditioners to enable seamless control.	
FIRA Academy (Part-Time) , Tehran, Iran	Jun 2021 – Mar 2022
Conducted training sessions on building and programming STM32 microcontrollers, guiding students in assembling simple robotic systems and working with Arduino boards.	
Digispark.ir (Part-Time) , Tehran, Iran	Jun 2019 – Dec 2022
Authored educational content on embedded systems and IoT topics, available at Digispark.ir/author/alixahedi .	

Languages

Persian: Native English: Upper Intermediate

Skills

Programming Languages: C, C++, Python, HTML, CSS, JavaScript, Verilog HDL
Tools: Linux, Docker, Git, PCB Design, MATLAB, HSPICE, Proteus, RTOS, LVGL, TouchGFX, OpenCV, PYQT, LaTeX
Platforms: STM32, AVR, Arduino, ESP32, ESP8266, Raspberry Pi, FPGA

Communication Protocols: UART, RS232, RS485, I2C, SPI, QSPI, CAN, Ethernet, Wi-Fi, Bluetooth, MQTT, HTTP
Others: Photography, Adobe Photoshop, Adobe Premiere, Network+

Patents

Smart Wheelchair:

2021

Developed an electric wheelchair with obstacle recognition, sound processing, panoramic imaging, and solar charging capabilities.

Honors and Awards

FIRST Global Competition (FGC) - Coach

2025

- New Technology Experience/ Innovator Award - **2nd place (Silver medal)**
- Courageous Achievement - **2nd place (Silver medal)**

IRAN FIRA Roboworldcup

2021

Secured 3rd place in the Innovation and Business category, demonstrating excellence in creativity and strategic planning.

Projects

Image Stitching Software (DeepStitch):

2025

Built a desktop tool for automatic image stitching using PyTorch, OpenCV, and PyQt6. Integrated SuperPoint and SuperGlue models for keypoint detection and matching, with custom blending for seamless panoramas. Includes a user-friendly GUI with adjustable stitching parameters and export functionality.

Digital Microscope Camera:

2024

A high-resolution digital microscope camera designed specifically for pathology applications, enabling clear and detailed imaging for precise analysis. It plays a crucial role in cancer diagnosis, providing high-quality digital images that enhance diagnostic accuracy and support efficient evaluations in medical laboratories.

3D Laser Scanner:

2024

Developed a sophisticated 3D laser scanner using an advanced laser rangefinder to generate accurate point clouds of scanned environments. This tool is designed to calculate precise volumes and dimensions by processing 3D data, making it invaluable for various industries like construction, manufacturing, and design.

Managed PoE Injector Hub:

2024

Engineered a power-over-Ethernet (PoE) injector hub with network management capabilities. The system includes real-time power monitoring, configurable power settings, and an integrated HTTP server for remote management, enhancing network efficiency and control for enterprise-scale deployments.

Carboxy and Plasma Therapy Device:

2023

Designed an advanced skincare and beauty therapy device incorporating high-precision sensors to deliver effective carboxy and plasma treatments. The user interface was optimized for simplicity and efficiency, allowing professionals to easily customize therapy parameters for better results in skincare.

Smart Air Conditioner Remote Control:

2023

Created a smart remote control system for air conditioners, allowing users to control their devices remotely over a Wi-Fi network. This system is part of a larger smart home automation solution that offers convenience and energy management for modern households.

Smart Home Control with DALI Protocol: Developed a master device for the DALI protocol (Digital Addressable Lighting Interface), enabling seamless synchronization and control of smart home devices. This solution enhances integration across different smart home components, ensuring smooth operation and scalability within home automation ecosystems.

2022

Remote Firmware Update for IoT Devices:

2021

Engineered a secure remote firmware update system for IoT devices over a LAN

network. The system utilizes AES-128 encryption to ensure secure, uninterrupted data transmission, safeguarding against unauthorized access, and protecting device integrity during the update process.