

EDUCATION

Amirkabir University of Technology (QS Global World Ranking)

Tehran, Iran

M.S. in Electrical Engineering, Digital Electronics, Overall GPA: 17.00/20.00

2018–2021

– Thesis: “Analysis of data received from vehicles, for driver behavior profiling on the computing cloud”

– **Supervisor** : Dr. Seyed Ahmad Motamedi –Thesis in Persian

- Analysis of Data Received from Vehicles for Driver Behavior Profiling on the Cloud: Developed a model that detects harsh driving events, such as abrupt braking and acceleration, using accelerometer and gyroscope data. Implemented a sliding window approach alongside decision tree models and integrated a dynamic time warping (DTW) algorithm for real-time processing with microcontrollers.
- Cloud-Based Event Transmission and Storage: Engineered a server application to efficiently receive and store MQTT packets, utilizing RabbitMQ as the message broker and Redis for temporary data storage. Architected the system using Docker containers to ensure seamless deployment, and developed a driving simulator application for data collection on driver behavior.
- Driver Behavior Analysis for Trip Grading: Performed statistical analyses on collected driving data to grade individual trips and evaluate driver behavior. Designed a system to calculate insurance rates based on driving habits, promoting safer driving practices.

K. N. Toosi University of Technology (QS WUR By Subject Ranking)

Tehran, Iran

B.S. in Electrical Engineering, Electronics, GPA: 16.25/20.00

2014–2018

Last two years GPA: 17.18/20.00

– Thesis: “Implementation of cloud switches supporting the measurement of power, temperature, and humidity through MQTT protocol” –**Supervisor** : Dr. Amir Mousavinia –Thesis in Persian

- Implementation of Cloud Switches Supporting Power, Temperature, and Humidity Measurement via MQTT Protocol: Designed and implemented a socket with two 10A outputs controlled through an MQTT dashboard. Integrated ACS712 sensors for measuring power consumption and DHT22 sensors for reporting temperature and humidity. Utilized the ESP32 as the main processor, with CloudMQTT serving as the message broker and the MQTT Dash Android app for real-time monitoring. [Demo-video](#)

SKILLS

• Programming Languages:

C, Python, Assembly, JavaScript

• Backend Development:

Django, Fast-API, Flask

• Frontend Development:

React, HTML/CSS

• Systems Integration Software:

RabbitMQ, Redis, MinIO, MySQL, Influx, ...

• Embedded System Firmware:

STM32: CubeMX/CubeIDE (FreeRTOS)

Espressif: ESP-IDF (FreeRTOS)

Mediatek: Nucleus RTOS

Quectel: OpenCPU

AiThinker: A9 SDK

• Other Tools:

Chat-GPT, Git, Docker, Jira, Adobe Photoshop, ...

WORK EXPERIENCE

- **Digikala (Robotics Team)** – Software Engineer Tech Lead 2022–Present
As a tech lead of the Automation and Robotics team, I focus on developing innovative automation systems to enhance operational efficiency. My role involves designing and implementing embedded systems tailored for robotics solutions. I lead various projects, including:
 - **Wheel Sorter:** Developed a high-speed sorting system designed to streamline package handling and significantly enhance delivery times. The wheel sorter connects to a server via MQTT, enabling real-time communication and control. Each unit features a CAN bus interface, allowing for seamless integration with DC drivers. These DC drivers power the DC motors, which precisely control the rotation of the wheel units. Additionally, each sorter is equipped with a Sensopart camera for barcode reading, ensuring accurate tracking and sorting of packages. This combination of technologies optimizes the sorting process, improving operational efficiency and reliability. -Sorter Architecture TODO: -demo video
 - **P2L (Put to Light)** Implemented an MQTT-based architecture for real-time communication between the ESP32 and server, allowing for the control of 45 LED strips with different colors. Developed an application layer protocol to enable light activation during item scanning, which reduced sorting time from 6 seconds to 5.1 seconds. Provided API documentation and supported the engineering operations team with integration into handheld applications. TODO: -demo video
 - * **Version 1:** Utilized an AVR microcontroller connected to buttons and lights via a CAN bus system, integrating with the company's comprehensive warehouse management system. This version supported Over-the-Air (OTA) updates but faced challenges related to usability, cost, and maintenance.
 - * **Version 2:** Transitioned to a simplified architecture by replacing the CAN bus with LED strips connected to an ESP32 through a multiplexer. This redesign eliminated physical buttons, significantly reduced costs, and improved maintenance.
 - **Dimension Detection:** Created a dimension detection solution using advanced sensors to optimize warehouse space and improve inventory management.
- **Basir Andishan Bina Tadbir (BABT)** – Embedded Software Engineer 2021–2022
Worked on the Multifunctional Vehicle Tracker project, designing cost-effective, feature-rich car tracking systems. Chose MediaTek's MT2503 SoC to support GSM and GNSS, leveraging firmware from new-mobie. Responsible for overcoming challenges related to limited documentation and development community around the module. The project involved interfacing with multiple sensors (accelerometers, gyroscopes) and working with various GSM-GNSS modules from Quectel, Simcom, AiThinker, and others.
- **Andishe Fartak AmirKabir (Atrovan)** – Embedded Developer 2018–2019
Developed the Indoor IR Controller for smart home applications. The project involved replacing multiple IR remotes (TV, receiver, air conditioner, etc.) with a single mobile-controlled device. Developed firmware for the STM32F1 microcontroller to learn and regenerate IR signals, while ESP8266 handled communication with the server and mobile app.

HOBBIES PROJECTS

- A9 Sms Sender
 - An A9-Gsm module was used to send SMS to a group of people with a desktop Qt application.
- Portable lightbox with IR-remote
 - A lightbox was designed that powered with power banks and can be controlled by IR-remote. STM32F0 was used on this project.
- Automate the Boring Stuff on Gecktori
 - Upload product on-site, extract any sales report on excel with python(Selenium)
 - Editing pictures, making the mockup file, and prepare the print file with photoshop-script (javascript)