

Masoud Rahimi

Embedded Systems Engineer.
Python Developer.

 Tehran, Iran
 (+98) 912 422 5230
 info@masoudrahimi.com
 <http://masoudrahimi.com>

About me

I believe an embedded software engineer should know both hardware and software of embedded systems. In the past few years, I tried to improve my software development skills by working in talented software teams. I also never gave up on hardware development and developed many projects, especially in the IoT industry.

EXPERIENCE

DEM Electronics, Tehran — *Embedded Systems Engineer*

Jan 2021 - PRESENT

Project Manager, Firmware engineer. Develop Software-Defined Radio (SDR) platforms.

PNR, Tehran — *Software Engineer*

Aug 2016 - Dec 2020

Project manager

Safir Telecom, Tehran — *Embedded Software Engineer*

Oct 2017 - Jan 2019

Head of the embedded software team. I Founded a custom framework for the VOIP team.

Pishrobot, Tehran — *Electrical Engineer*

Sep 2013 - Sep 2016

Electrical engineer. Tester engineer for the custom robotic platforms.

EDUCATION

Shahid Beheshti University, Tehran — *Master in Digital Electrical Engineering*

Aug 2013 - Dec 2015

The dissertation title was "Design and Implementation of SPI protocol in FPGA," a novel study to implement serial-like protocols in configurable hardware systems.

SKILLS

Programming Language

Python

C/C++

Development

Embedded system design

IoT design

Embedded Linux development

Yocto Project, Buildroot, LFS

Cross-compile development

Linux driver development

Data communication protocol design

ARM Mbed platform

Django, Django REST framework

PostgreSQL

PyQt

Unit Testing

Test-Driven Development

Docker

Jenkins, Travis CI, Gitlab CI

Familiar with

IoT industry

IBM's Watson

Altium designer

ALSA project

Jira

Detail Experience

I. PNR, Tehran

Aug 2016 – PRESENT

I was a mentor and a creative architect. As a software engineer with knowledge of low-level design, I found an expected relation between software and hardware teams, like making protocols and resolving varied projects.

I was a software engineer in the field of web-based services, network security, IoT.

Most projects developed based on a micro-service architecture with the help of common design patterns and software principles like SOLID and TDD.

Projects:

1. **Compiler Service API**— Project Manager, Software Developer

The primary purpose of the project was to generate binary applications from source code with custom parameters. It was part of an automation system. The service was designed to create binaries with custom parameters from the source code. It developed entirely based on Python with the help of the Django REST framework (DRF) for the web service. The system supported many development environments like Android studio (Gradle), Microsoft's Visual Studio (MS Builds), Python executable (PyInstaller), etc. The project was built over Docker and can be used in any infrastructure.

Tech Stack: Python, Django, Django REST framework, PostgreSQL, Docker

2. **Social Network Crawler** —Software Developer

The project was developed to gather famous social network services like Twitter, Instagram, Facebook, etc. I designed the Twitter part and created a simple GUI with PyQt for user interactions.

Tech Stack: Python, PyQt, MySQL.

3. **Secure Messenger Service**— Software Developer

The project's primary purpose has been to create a web-based messaging system to transfer files between users. The system has been quite like common messenger apps like WhatsApp, Telegram, etc. The project supported custom user authorization, Microsoft's Active Directory, external malware scanners, group messaging, etc.

Tech Stack: ASP.Net core, Microsoft SQL Server, Python, SignalR, Docker

4. **CI/CD Pipeline**— DevOps Engineer

Automate multiple non-automated projects with CI/CD tools. Projects based on Android Studio, ASP.NET Core, Python, etc. that needed continuous integration and continuous delivery. My role was to dockerize each one and create a ready-to-use environment for the development team.

Tech Stack: Docker, Docker Harbor registry, Jenkins, Gitlab CI.

5. **Vehicle Tracking System (IoT based approach)**— Project Manager, Software Developer

It was a vehicle tracking system project based on GPS and cellular networks. The project's primary purpose was to track the vehicle based on GPS data and send information to the central server. The system was designed based on micro-service architecture and the help of

RESTful service to communicate between backend service, user-panel, and devices.

The device has other features like output relay, input voltage sensor, IMU sensor, etc.

Tech Stack: C, C++, Python, ARM Mbed, Django, Django REST framework, Travis-CI, PyQt, ReactJS

6. IoT Demo Lab— Embedded Software Engineer

I Developed a system that demonstrates the abilities of the ARM Mbed platform for penetration and performance testing. Hardware was based on a sample development board ([IBM's Ethernet IoT Starter Kit](#)) and transferred onboard sensors. The server-side and user interface implemented with the "Node-Red" and "Mbed-cloud" technologies.

Tech Stack: C, C++, Node-Red, ARM Mbed

II. Safir Telecom Industries, Tehran

Oct 2017 - Jan 2019

Embedded Software Engineer (Remote)

The project I worked on was a custom VoIP military graded platform which fully built over scratch. I was the head of the software development team, and some of my leading roles were:

1. Design and implement a custom development environment for the software team to test and use cross-compile tools.
2. Create DTS files for mainboards with varying hardware peripherals.
3. Create sound card drivers for sound devices based on TI's Sitara Linux Audio Driver (DaVinci).
4. Design custom firmware for mainboards, including customizing Linux kernel and Linux filesystem.
5. Create custom Linux OS for the firmware using Buildroot and LFS (Linux from Scratch).

Open Source Contribution

I. Embedded Linux Image Builder ([GitHub Link](#))

This project creates a fully customized embedded Linux image from the source (like Linux From Scratch). You can use this project to fully customize your embedded Linux image like changing kernel configuration, creating new Linux distros, customizing images for other board variants, etc.

Tech Stack: C, Shell, Docker

II. OVTS— Open-source Vehicle Tracking System ([GitHub Link](#))

[OVTS](#) is an Open-source Vehicle Tracking System project based on GPS. It can track the device based on GPS data and send information to the central server (AKA Center). It can mount on a car or any other vehicle. The communication is over on GPRS and SMS. The device has additional features like output relay, input voltage sensor, IMU sensor, etc.

Tech Stack: C, C++, Python, ARM Mbed, Django, Django REST framework, Travis-CI, PyQt

III. Arm Mbed OS— A platform operating system designed for the internet of things ([GitHub Link](#))

- Develop the crash reporting for the STM32F4 series
- Improve documentation.

IV. Face Recognition— *The world's simplest facial recognition API* ([GitHub Link](#))

- Created a Windows installation [procedure](#) for the project.