

Masoud Rahimi

Full Stack Embedded Software Engineer.
Software Developer (Backend).

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About me

I believe an embedded software engineer should have quite a knowledge of 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 some new projects, especially in the IoT industry.

EXPERIENCE

[Private](#), Tehran — *Software Engineer*

Aug 2016 - PRESENT

Project manager of the software team. Founded DevOps infrastructure for the team.

[Safir Telecom](#), Tehran — *Embedded Software Engineer*

Oct 2017 - Jan 2019

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

[Pishrobot](#), Tehran — *Electrical Engineer*

Sep 2013 - Sep 2016

An electrical engineer in R&D team. Tester engineer for the custom robotic platforms.

EDUCATION

[Shahid Beheshti University](#), Tehran — *Master in Digital Electrical Engineering*

Aug 2013 – Dec 2015

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

SKILLS

Programming Language

Python

C/C++

Development

Circuit design

Electronic interfaces (SPI, I2C, GPIO, UART)

Hardware debugging

Embedded Linux development

Buildroot, LFS

Linaro toolchain

Linux driver API

ARM's 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. Private, Tehran

Aug 2016 – PRESENT

Software engineer on software projects such as web-based services, network security, IoT industry and, Desktop applications.

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 main purpose of the project was to generate binary applications from source code with custom parameters. It was part of an automation system. The service designed to generate binaries with custom parameters from source code. It was developed fully based on Python with 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 built over docker and can be used in any infrastructure.

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

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

The main purpose of the project has been to create a web-based messaging system with the ability 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

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

Automate multiple non-automated projects with CI/CD tools. There were a couple of 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.

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

It was a vehicle tracking system project based on GPS and cellular networks. The main purpose of the project was to track the vehicle based on GPS data and send information to the main server. The system 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

5. IoT Demo Lab— Embedded Software Engineer

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 transfer data for on-board sensors. The server-side and use interface implemented with Node-Red and mbed-cloud platform.

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 the scratch. I was the head of the software development team and some of my main 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. 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 main server (AKA Center). It can be mounted on a car or any other vehicle. The communication is over on GPRS and SMS. The device has other features like output relay, input voltage sensor, IMU sensor, etc. This project covers **Device-side**, **Server-side** and **User Panel**.

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

II. Recipe App API— A recipe RESTful API ([GitHub Link](#))

A recipe RESTful API sample service written with the Django REST framework based on Test Driven Development (TDD) built over Docker and Travis CI.

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

Enabled crash reporting by adding memory region for the STM32F407 series.

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

Created a Windows installation tutorial for the project.