**Mohammad Vatandoost Silab** **Software Engineer**

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Date of birth: 19/08/1995 Location: Tehran, Iran [Github Page](https://github.com/mohammadVatandoost)

**Summary**

I have more than 6 years of experience in Embedded, Desktop, and Back-End Software development for small and medium enterprises. I participate in all phases of the software development life cycle. I mainly work with C/C++, Qt framework, Golang, and Python. Most of my working experience is in a team, I enjoy helping my team to solve problems.

**Experience**

**Software Engineer** [Fanap-infra.ir](https://fanap-infra.ir/)

Aug 2020 – present

Fannap-infra is developing multiple Software projects. I am working in Behnama projects team. Behnama is a distributed video surveillance software (like Genetec) that manage more than 10000 cameras in more than 300 servers. It is built on micro-service architecture.

* Architecting streaming services(RTSP, Analyzer, Recording and WebRTC services) by using GRPC, Go, C++, Python and Kafka
* Stream Enrichment: Push Analyzer service output as Metadata to Kafka
* Writing a WebRTC player backend for playing live and records. It receives commands and sends records list and metadata by WebRTC data channel – Go
* Developing Recording service for recording and playback streams - Go
* Using GRPC for communication between services – Go, C++ and Python
* Receiving RTSP(IP Camera stream) by FFmpeg library – C/C++
* Developing Transcoding service for converting and exporting media by FFmpeg – C/C++
* Creating recording file structure for minimizing head movement of HDD – Go
* Adding motion detection (by OpenCV) to analyzer service – Python
* Using Redis as notification service – Go and C++
* Dockerise Stream and RTSP services
* Adding functional and integration tests by Postman

### Software Engineer [3ddreams.ir](https://3ddreams.ir/)

### Dec 2019 – Jul 2020 (8 months)

### 3DDreams build the industry 3D printer devices with 4K resolution and 50 micro-meter layer thickness. I developed server and client software for the device. The server software is running in a raspberry pi inside the device and the client software is a cross platform app that run in a desktop computer.

* Building a CRUD for data by using QAbstractListModel and SQLite – C++
* Convert SLC file to SVG, and render it in real-time for showing in UV projector
* Adding unit test by GTest and GMock to client and server project – C++
* Implementing UI of the client application by QML
* Socket programming and using Protobuf for messages structure – C++
* Using Serial Port for Communication with actuator – C++.
* Using signal-slot pattern for multi-threading communication – C++
* Using Jenkins for CI/CD

### Embedded Software Engineer [raiwan.ir](http://raiwan.ir/)

### Nov 2017 – OCT 2019 (2 years)

### Raiwan works on designing and building IoT and industrial manufacturing and laboratory devices.

### I developed software for industrial devices. I designed and implemented algorithms for different use cases, such as: Oil industry, IoT, Polymer industry and civil industry.

* Receiving data from Socket at rate 96 MBit, then simultaneously Decode, Decrypt(Cryptopp library) and Mux(ffmpeg library) H.264 and audio(PCM to AAC) frames to MP4 – C/C++
* Writing a Linux USB Driver - C
* Working with RS485 mode bus protocol in industrial devices – C++
* Developing Android app that connect to modules by BLE and OTG, It receives files and send user commands - Java
* Writing bitcoin mining farm monitoring software - Node js and C

### FreeLancer

Feb 2016 – Sep 2017 (1 year and 8 months)

I worked with multiple startups to build theirs MVP products.

* Receiving sensors data in real time from serial port and plot them by QtChart – C++
* PID controller design for controlling temperature
* Preprocessing data by FFT and filters like Butterworth and averaging data chunk.
* Converting Matlab code of costumers to C++ code.
* Using UART and I2C protocol in Orange pi and Raspberry pi.
* Designing relational data base.
* Crawling websites with Selenium – Java
* Building Nurse pager with ESP8266 (Arduino firmware)

**Student Researcher** KNTU Aras robotic Lab

Nov 2014 – Jan 2016 (1 year and 3 months)

KNTU Aras robotic Lab research on UGV and MAV. I designed and programmed robot's embedded system.

* ARM Microcontroller(Stm32 series) and AVR programming (Used I2C, UART, SPI, PWM, USB and ADC peripherals).
* PCB Designing of Embedded systems.
* Working with Different sensors and Electronics modules.

**Education**

* University of Tehran, MS, Computer Software Engineering,  (2019 - 2021) (GPA: 3.5/4)
* K. N. Toosi University of Technology , BS, Electronic Engineering, (2013 - 2018) (GPA: 3.3/4)

## **Recent Projects**

* **fsEngine** Go [link](https://github.com/fanap-infra/fsEngine)  
  A write-optimized object storage, designed for high load on commodity hardware.
* **Onvif** Go [link](https://github.com/fanap-infra/onvif)  
  Onvif is an implementation of ONVIF protocol for managing onvif IP devices.
* **RTSPToKafka** C++ [link](https://drive.google.com/file/d/1NFzhaIAhVwnYyLFA-jzmR53IkqKCXHVc/view?usp=sharing)  
  A service for streaming RTSP to Kafka topic.
* **Qt-Sample-App** C++ [link](https://drive.google.com/file/d/1FosYK0b-a0Su7AiJSLxN2dQmVHVQ_cwS/view?usp=sharing)  
  Qt-Quick app sample.

## **AWARDS**

## AUT cup 2016 Our Team achieved the second place in Rescue robots competition.

## IRAN Open 2015 robotic competition Our Team achieved the first place in finding land mine robots competition.

## Chess Competition I achieved the first place in chess competition between high schools students

### Teaching

* Teaching Embedded software development course in Robotic lab of K. N. Toosi University of Technology
* Teacher assistant of Computer Network and Performance Evaluation of Computer Systems courses

### Skills

### Languages: C, C++, Golang, Python, Bash, javascript and Java

### Tools and Frameworks: Qt, CMake, Message Queue (Kafka), Jenkins, Git, Docker, Matlab, GNS3, Keil and STM32Cube

### Protocols: GRPC, RTSP, WebRTC, Onvif, TCP, UDP, RS485 mode bus, RS232, I2C, UART and SPI

### Data Bases: Sqlite, Influxdb, PostgresSQL and MongoDB

### Tests: Unit tests, Functional tests, Integration tests, GTest and GMock

### Devices: Raspberry pi, Orange pi, Nano pi, STM32(ARM Cortex-M), Odroid and ESP8266

### Other: OOP, Functional Programming, Multithreading, QML, FFmpeg, Linux, Protobuf, Linux Module development, Pair programming, STL, Arduino, Agile (including Scrum/Kanban), REST, H264 and Jira