Amin Aghayani

Electronic & Computer Engineer

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About me ———

I have finished my Bachelor's degree at one of the high-rank universities in Tehran, Iran. My major is Electronic Engineering and my minor is Computer Engineering. I believe that team-working skills and gaining experience are critical so I have worked with several teams and learned valuable lessons both in university and companies.

Skills ———

Programming Language:
Qt, C++, C, Python, Java, Laravel

Micro Controller:
ARM, ARDUINO, AVR, KEIL & CUBE

Electronic:
ADS, Pspise, MULTISIM, PROTEUS, Altium Designer, Soldering and Debugging electronic boards

AI:
Tensorflow, Pytorch, CUDA

Engineering Tools
Matlab, CUDA Decoders, OpenCV, ROS, ARDUPILOT

Interests

Embedded Systems • Intelligent Control Systems • Computer Vision and Image Processing • IoT and Industrial Data Analysis • Artificial Intelligence • Biomedical Signal Processing

Education

2017-2021	B.Sc. K.N. Toosi University of Technology Bachelor of Science in Electrical Engineering - Electronic ranks 351-400 due to QS	Tehran, Iran

Cumulative GPA: 17.66/20 (3.81 US scale)
GPA of the last 7 semesters: 18.3/20 (3.92 US scale)

Thesis: Educational board(a micro controller based board with several modules for educational purposes) & oscilostor(a cheap and fine-tuned Logic analyzer with extra features)

2012-2016	High school National Organization for development of exceptional talents, Allame Helli 5 Specializing in mathematics and physics.	Tehran, Iran

Publications

Jan2023-now Working on publishing a finished project about Swarming Flight Formation Transitions

Honor and Awards

2021	Winner of the practical Bachelor's nominated projects. This competition is among nominated projects from all over the Khajeh nasir university throughout each year.
2021	Ranked 2rd in electrical engineering graduate students in K.N.Toosi University
March2019	1st Place at FIRA AIR 2019 - Drone Emergency Service - Indoor Leagues Mar 2019 Issuer: Amir Kabir University of Technology
2015	Ranked among the top 0.3 percent of the participants of the National University Entrance exam (980 out of 300000)
2014	Qualified for the second step of the national physics Olympiad

Working Experience

2018-now	Robotic Researcher at ARAS(Advanced Robotics and Automated systems supervised by Dr.Taghirad)
2020-2022	Embedded Linux and Qt programmer at Partodade Co. (designer and integrator of intelligent system call center)
2020-2021	Microcontroller developer at Nabz Group (designer and manufacturer of smart healthcare gadgets)

Teaching Experience

2023-now	Teacher of over 100 students in Allameh Helli High Schools Branch 1 Teaching Python, AI, and web programming in the oldest National Organization for Development of Exceptional Talents in Iran
2022	35 hours of Applied Electronics under the supervision of the Robotics Society of Iran (RSI) A course conta Teaching ARDUINO programming, circuit designing basics, and internet networks
2023-now	Mentor of an autonomous unmanned aerial vehicles team at ARAS

PROJECTS

Thesis project

- My thesis project consisted of two boards named "educational board" and "Oscilostor". Both boards were powered by an stm32; educational board had several modules which enabled students to bring their ideas to life in both Arduino and Arm Languages and learn many embedded system programming lessons. Moreover, Oscilostor was a cheap and fine-tuned Logic analyzer with extra features. Oscilostor was also a great portable system with a Qt application to measure voltage and current signals and generate real-time graphs and find resistance, capacitance, and inductance values. This project was the winner of the practical Bachelor's nominated projects. This competition is among nominated projects from all over the Khajeh Nasir university throughout each year.

IOT project

- This project was supervised by Dr.Darmani the Faculty of Electrical Engineering K.N. Toosi University. My task was to program several esp1 as clients and an esp32 as a server with C++/Arduino. Eventually, these nodes could communicate with each other and follow some orders. Then a user can control the house with the help of an application or a website.

FPGA project

- The purpose of this project was to implement appropriate techniques for running a simple Multi-Layer Perceptron (MLP) on an FPGA (Field-Programmable Gate Array), specifically a Spartan-6. The project involved considering various techniques for each step of the procedure and comparing their effectiveness at the end.

Machine learning

- Coding MLP, RNN, LSTM, GRU, and auto encoders from scratch.
- Recognizing and classifying persian alphabet and words using openCV and keras
- Multi object tracking with fast mask RCNN and pytorch

Computer Vision course project

- Detecting lines, H marks, humans, etc using openCV
- Implementing slam with the help of rtabmap and ROS
- Fast image processing by Cuda on linux

Creating an STLink

- An implementation of open source circuit of STLink and deploying relating codes. (a device for programming stm32 boards)

Working Experience Details

Robotic researcher

- As a robotics researcher, my tasks ranged from designing electronic boards with Altium designer, developing and deploying microcontroller codes, including appropriate controller algorithms and communication with stationary processors and maintaining connection with sensors, to stm32-powered boards. Plus, developing scripts for our robots to be able to see, using OpenCV and C++/Qt, to deploying the final result to embedded systems like Odroid which worked as the mind of the drone. These tasks included road pattern detection, window detection, and face recognition.

Qt programmer and Embedded Linux Developer at Partodade

- Partodade is a well-known designer of intelligent system call centers for companies in Iran, with famous projects such as the National Emergency Medical Call Center (ambulance service) and the Telephony Information Service of the main airport of Iran. My responsibilities included compiling and deploying finely-tuned embedded Linux systems using Yocto and

Buildroot on an Arm Cortex platform. I also performed cross-compilation of C++/Qt VoIP codes, with the help of established Linux systems and open-source telephony codes like PJSIP.

Microcontroller programmer at Nabz Group

- I developed an Arm stm32 code, including PWM, Watchdog, Timer, etc, for a digital stethoscope which had several more features, like denoising, than an ordinary stethoscope. The stethoscope is sold to hospital and had all the necessary medical standards.

Selected Courses

These are my selected courses during my bachelor's years of study:
Deep Learning, Fundamentals of Computer Vision, Fundamentals of Optimization, Circuit Synthesis and Filter

Minor Field

I chose computer engineering as my minor field of study, which allowed me to learn many valuable lessons in various computer courses and gain experience alongside computer engineering students. I had the chance to combine my hardware knowledge from my major field, electronics, with programming skills and engage in numerous multidisciplinary tasks.

Passed Courses: Advanced Programming, Discrete Mathematics, Computer Architecture, Data Structure, Operating Systems, Algorithms Design, Database, Computer Networks

Note: Only high-ranked students were able to choose a minor field
Note: The score of these courses don't have any effect on my GPA.

Langauge Proficiency

- **Toefl IBT** Reading: Listening: Speaking: Writing: **Overall:**

REFRENCES

- Dr. Hamid D. Taghirad Professor, Faculty of Electrical Engineering Khajeh Nasir Toosi University of Technology , Tehran, Iran
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