# Nima Mahmoudi

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## Education

**Ph.D. in Software Engineering and Intelligent Systems** — **Sep 2018 – now**
*University of Alberta, Edmonton, Canada* — *GPA so far: 4/4 via 9 credits*

**Master of Digital Electronics Engineering** — **Sep 2014 – May 2017**
*Amirkabir University of Technology, Tehran, Iran* — *GPA: 18.55/20 (3.91/4) via 32 credits*

**Bachelor of Electrical Engineering, Telecommunications** — **Sep 2010 – Sep 2016**
*Amirkabir University of Technology, Tehran, Iran* — *GPA: 18.1/20 via 140 credits*

**Bachelor of Electrical Engineering, Electronics** — **Sep 2010 – Sep 2014**
*Amirkabir University of Technology, Tehran, Iran* — *GPA: 18.23/20 (3.88/4) via 140 credits*

## Experiences

### Research Experiences

**Research Assistant** — **Aug 2019 – now**
*Performant and Available Computing Systems (PACS) Lab, York University* — *Toronto, Canada*

**Research Assistant** — **Jul 2018 – Aug 2019**
*Dependable and Distributed Systems Lab (DDSL), University of Alberta* — *Edmonton, Canada*

- Led the "Optimizing the Performance of Serverless Computing Platforms" project.
- Used **Python**, **Keras**, and **Tensorflow** on **Docker** to optimize the performance of an example *Serverless Computing* system.

**Research Assistant** — **Dec 2014 – Jul 2017**
*Signal and Speech Processing Research Lab, Amirkabir University of Technology* — *Tehran, Iran*

- Performed research on "Robust Vision-based Multi-Target Object Tracking".
- Implementations done in **MATLAB**.
- Used *MAP estimation*, *Object Motion Modeling*, *Kalman Filter*, and *Convolutional Neural Networks (CNN)*.

**Research Assistant and Lab Supervisor** — **Oct 2012 – Jul 2017**
*Control of Multi Vehicle Systems Lab, Amirkabir University of Technology* — *Tehran, Iran*

- Performed research on using Computer Vision for controlling Unmanned Ground Vehicles (UGVs) and Quadcopters leading a team of 5.
- Implemented robust hand tracking using LBP features and *Kalman Filtering* in **MATLAB**.
- Designed and implemented a multi-agent algorithm on UGVs in a team of 5.
- Implemented a robust localization by fusing vision and encoder data on a UGV using **OpenCV**, implemented in **C++**.
- Led a team of 7 in desgining and implementation of the electronics of an Unmanned Ground Vehicle (UGV) including hardware design in *Altium Designer*, hardware programming in **C**, and interfacing with computer using **Python**.

**Intern** — **Jul 2013 – Dec 2013**
*CyberSpace Research Institute (CSRI)* — *Tehran, Iran*

- Researched the applications of Augmented and Virtual Reality (AR and VR).
- Implemented two AR-based applications on *Android* using **Java**.

### Industrial Experiences

**Founder and CTO** — **Jun 2015 – Mar 2018**
*Luxin Tech* — *Tehran, Iran*

- Led a team of 4 technical staff in designing and implementing several smart home and industrial gadgets.
- Successfully went through three rounds of fundraising and one successful crowdfunding while dealing with sanctions and financial decline in the country.
- Designed and developed hardware, software, communication protocols, and web services.
- Developed on a wide range of microcontrollers using **C/C++**.
- Web services and computer interfacing were all done in **Python** and **Django**.

**Android Developer** **Oct 2013 – Aug 2015**
*Red Design Studio* *Tehran, Iran*
- Developed 8 Android applications using **Java** in collaboration with the UI/UX designer.
- "Official Letters" application was the best seller Android application in Iran for 8 weeks.

## Teaching Experiences

**Part-Time Instructor** **Jan 2020 – Now**
*Seneca College* *Toronto, Canada*
- Part-Time Instructor in CPA/CPD program in School of Software Design and Data Science.

**Teaching Assistant in EECS 1021** **Jan 2020 – Apr 2020**
*York University* *Toronto, Canada*
- TA for Object Oriented Programming from Sensors to Actuators.

**Introduction to Python Workshop Presenter** **Jun 2019**
*MEGSA speaker series 2019, University of Alberta* *Edmonton, Canada*
- Taught over 100 graduate researchers how to use **Python** programming language in their research.

**Marking Assistant in Reliable and Secure Systems Design** **Jan 2019 – Apr 2019**
*University of Alberta* *Edmonton, Canada*
- Helped about 40 students develop two projects in reliability and availability engineering in computing systems.

**Introduction to Python and Machine Learning Workshop Presenter** **Feb 2019**
*MEGSA speaker series 2019, University of Alberta* *Edmonton, Canada*
- Taught over 40 graduate researchers how to use **Python** programming language and especially how to leverage it for using machine-learning in their research.

**Introduction to Vision-Based Tracking Invited Speaker** **Oct 2016**
*Shariaty Technical College* *Tehran, Iran*

**Teaching Assistant in Multimedia Systems** **Sep 2014 – Dec 2016**
*Amirkabir University of Technology* *Tehran, Iran*
- Taught *Machine Learning*, *Image Processing*, and *Computer Vision* to over 120 students over a course of 3 years.
- Helped over 30 groups of students implement projects in *Computer Vision*, *Image Processing*, and *Audio Processing* using **MATLAB**, **Python**, and **C/C++**.
- Added hands-on material to the course curriculum taught in TA classes.

**Introduction to Arduino Workshop Presenter** **Dec 2015**
*Shariaty Technical College* *Tehran, Iran*

**Technical Commitee and Workshop Presenter** **Nov 2015**
*The Second AUTRONICS competitions, Amirkabir University of Technology* *Tehran, Iran*
- Presented the "Introduction to Arduino" workshop to over 100 participants.

**Teaching Assistant in Pulse and Digital Circuits** **Jan 2014 – Apr 2014**
*Amirkabir University of Technology* *Tehran, Iran*

**Teaching Assistant And Lab Instructor in Electronic Measurement** **Jan 2014 – Apr 2014**
*Amirkabir University of Technology* *Tehran, Iran*

- Redesigned the lab instructions replacing outdated content with the latest technologies available.
- Helped over 30 students learn how to measure several aspects in medical and industrial settings, interfacing the measurements with computers, and turning them into actionable insights using signal processing techniques.
- Taught concepts in *microcontrollers*, *LabVIEW*, and *MATLAB*.

## Awards and Honors

**Sep 2018**: Received the University of Alberta Doctoral Recruitment Scholarship.

**Dec 2017**: Won the 1st team prize in "BimehTech", Iran's first Tech Insurance Hackathon.

**Nov 2014**: Received *Students' Research Reward* from the *Iran's National Elites Foundation (INEF)*.

**Aug 2010**: Ranked *252nd* in the *Nationwide University Entrance Exam* with nearly *320,000 participants*.

## Publications

- Sabuhi, M., Mahmoudi, N., Khazaei, H. (2019). Optimizing the Performance of Cloud Software Systems using Adaptive PID-Controllers. International Conference on Performance Engineering (ICPE 2020). (submitted)
- Mahmoudi, N., Lin, C., Khazaei, H., & Litoiu, M. (2019, November). Optimizing serverless computing: introducing an adaptive function placement algorithm. 29th Annual International Conference on Computer Science and Software Engineering (pp. 203-213). IBM Corp.
- Mahmoudi, N., Ahadi, S. M., & Rahmati, M. (2018). Multi-target tracking using CNN-based features: CNNMTT. Multimedia Tools and Applications, 78(6), 7077-7096.

## Selected Projects

**An Analysis of Dependency Network Evolution in PyPI** **Feb 2019 – Apr 2019**
*University of Alberta* *Edmonton, Canada*

- Led a team of 3 to analyze the dependency network in the Python's package manager.
- Used **Python** and **R** to perform *Regression Analysis*, *Data Aggregation*, *Data visualization*, and *Graph Analysis*.

**A Study of Policy Gradient Methods in a Small Environment** **Mar 2019 – Apr 2019**
*University of Alberta* *Edmonton, Canada*

- Used **Python** to implement simple *Policy Gradient Methods* in **Reinforcement Learning** including *REINFORCE* and *Actor-Critic* algorithms.

**Executability of Python Snippets in Stack Overflow** **Jan 2019 – Feb 2019**
*University of Alberta* *Edmonton, Canada*

- Performed large-scale analysis of the Python code snippets executed in **Docker Containers** on **Kubernetes**.
- Used **Google BigQuery** and **SQL** for faster analysis of more complex queries on over 400GB of data.

**Managing Decentralized Energy Production and Consumption** **Nov 2018 – Dec 2018**
*University of Alberta* *Edmonton, Canada*

- A member of a team of 2 working on the possibility of using *Ethereum Smart Contracts* for smart energy trading.
- Used **Python** and **Django** to implement a web service using **Docker** on **Kubernetes** for interfacing, logging, and visualization.
- Used **NodeJS** to interact with the *IOTA* blockchain framework.

**Prediction of Edmonton Real Estate Prices using Openly Available Datasets** **Nov 2018 – Dec 2018**
*University of Alberta* *Edmonton, Canada*

- Used **Python** with **SciKit-Learn** and **Keras** to implement *Data Preprocessing*, *Training*, *Prediction*, *Evaluation*, and *Data Visualization*.