Mehdi Safaee

mehdi0xc.github.io
+98 912 220 70 14
github.com/Mehdi0xC
mehdi0xc@gmail.com

Skills & Knowledge

Advanced Programming
*Python Programming **[confident]***
*C/C++ Programming **[familiar]***
*Matlab Scientific Programming **[familiar]***
*Data Structures **[familiar]***

Mathematics
*Linear Algebra Basics **[confident]***
*Probabilities and Statistics Basics **[confident]***
*Calculus Basics **[familiar]***
*Optimization Basics **[familiar]***

Neural Networks
*Deep Learning Basics **[confident]***
*Neurobiology Basics **[confident]***
*Nvidia TensorRT **[familiar]***
*Pytorch/Tensorflow 2/Keras **[familiar]***
*NEURON Simulator **[familiar]***

Artificial Intelligence
*Reinforcement Learning Basics **[familiar]***
*Search Algorithms **[familiar]***
*Q-Learning and DQN **[familiar]***

Robotics
*Robotic Vision **[confident]***
*ROS **[familiar]***
*Linear Control Basics **[familiar]***
*Navigation **[familiar]***

Interests

- Reinforcement Learning
- Autonomous Robotics
- Adaptive Control
- Computer Vision
- Meta-Learning
- Signal Processing

Education

- **B.Sc. of Computer Engineering at Amirkabir University of Technology (2013-2019)**
  - *GPA: 16.47/20 (~82/100, Considered A by McGill international grade equivalency)*
  - ***Extra Minor** in Electrical Engineering*
  - *Passed a total of 160 credits (140 + **20 Extra optional** credits, **including 12 master's credits**)*
- **Diploma of Mathematics at Ghalam private highschool (2009-2013)**
  - *GPA: 19.32/20*

Notable Achievements

- *Member of **Iranian National Elites Foundation***
- ***Ranked 1st** in National Elites **Artificial Intelligence and Smartization** contest (Rahneshan) **(2021)***
- ***Among Top 10% Students** of Computer Engineering Entrance (~100 Students)*
- *Ranked **1st among all the students** of high-school during **all years (2008-2012)***
- *Ranked **1st** in national Robotics contest (students track in Special Path-Finding Robots) **(2008-2012)***
- *Semi-finalist at **mathematics, physics, and astrology olympiads** in high-school **(2010-2011)***
- *Silver and Bronze medals at Iranian Youth Chess Championship (Tehran Province) **(2006-2007)***

Related Outstanding Courses

Course	*Grade*	*Standing*	*Institution*
Neural Networks	*A+*	***Ranked 1st** in our class of ~20 graduate students*	***AUT***
Artificial Intelligence	*A*	***Ranked 1st** in our class of ~30 undergrad students*	***AUT***
Probability and Statistics	*A+*	***Ranked 1st** in our class of ~50 undergrad students*	***AUT***
Fundamentals of Programming	*A+*	***Ranked 3rd** in our class of ~30 undergrad students*	***AUT***
Advanced Programming	*A+*	***Ranked 6th** in our class of ~50 undergrad students*	***AUT***
Real-Time Embedded Systems	*A+*	***Ranked 1st** in our class of ~30 undergrad studentss*	***AUT***
Signals and Systems	*A*	***Ranked 2nd** in our class of ~20 students*	***AUT***
Linear Control System	*A+*	***Ranked 1st** in our class of ~30 students*	***AUT***

Publications

- **Realtime Intelligent Path-finding Agent with DQN Algorithm**
  - *B.Sc. Project (Spring 2019 - Fall 2019) - Under the supervision of Dr. Mehdi Sedighi*
- **Few-shot Imitation Learning in Path-finding Autonomous Robots**
  - *On-going research work (Summer 2020 - current) - Under the supervision of Prof. M. B. Menhaj*

Notable Research Experience [view details]

- **Research assistant at Amirkabir computational intelligence lab**
  - *Working on different reinforcement learning algorithms and their applications*
  - *Under the supervision of Dr. Menhaj, summer 2019 - present*

Language Proficiency

- **TOEFL (Total: 105/120, Reading: 25/30, Listening: 29/30, Speaking: 25/30, Writing: 26/30)**
- **GRE (Quantitative: 166/170, Verbal: 150/170, Writing: 4/6)**

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*Robotic Vision **[confident]***
*ROS **[familiar]***
*Linear Control Basics **[familiar]***
*Navigation **[familiar]***

Areas of expertise

- Data Science (Junior)
- Computer Vision Engineering (Mid-Level)
- Embedded Software Development (Mid-Level)

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Related Courses

Neural Networks *[grad. level] (A+)*
Artificial Intelligence *(A)*
Engineering Statistics and Probabilities *(A+)*
Fundamentals of Programming *(A+)*
Advanced Programming *(A+)*
Machine Learning *[grad. level] (Optional - PASS)*
Data Structures and Algorithms *(A)*
Parallel Processing *[grad. level] (B+)*
Database Design + Lab *(B+)*
Operating Systems + Lab *(B)*
Software Engineering *(A)*
Internship (Neural Signal Processing) *(A)*
B.Sc. Project (Reinforcement Learning) *(A+)*
Real-time Embedded Systems *(A+)*
Linear Control *(A+)*
Microprocessors + Lab *(A)*
Electronic Circuits + Lab *(A+)*
Signals and Systems *(A)*
Fundamentals of Biomedical Eng. *(A)*
Digital Signal Processing + Lab *(Optional - PASS)*
Electrical Circuits + Lab *(A)*
Logic Circuits + Lab *(A)*
Computer Architecture *(A)*
Computer-Aided Digital Design (FPGA) *(A)*

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Skills & Knowledge

Signal Processing
Signal Processing Basics ***[familiar]***
Signal Processing in Matlab ***[familiar]***
Image Processing in OpenCV ***[confident]***

Data Science
Applied Machine Learning ***[confident]***
PySpark ***[familiar]***
Data Wrangling and Visualization ***[familiar]***
SQL Database Design ***[familiar]***

Embedded Systems
Arduino/RaspberryPi ***[confident]***
ARM Cortex Series ***[familiar]***
Jetson Series ***[familiar]***
Realtime Operating Systems ***[familiar]***
S/H Co-Design (Xilinx FPGAs) ***[familiar]***

Software Systems
Basics of Data Structures ***[familiar]***
Software Eng. Principles ***[familiar]***
Linux and Bash Scripting ***[familiar]***
Docker ***[familiar]***

Other Notable Skills
Latex ***[familiar]***
Parallel Processing (MPI/openMP) ***[familiar]***
HTML/CSS/Javascript ***[familiar]***

Work Experience

- **Computer Vision** Engineering **Team Leader** at Deliware Company ***(Fall 2020 - Spring 2021)***
  - *Developed a fully distributed and accelerated perception (Object Det., Segmentation, and Depth Est.) pipeline*
  - *Developed efficient and fast video/data streaming methods for remotely controlling robots*
- Freelance **Computer Vision** Engineer ***(Summer 2018 - Fall 2020)***
  - *Developed highly efficient vision/image processing pipelines and solutions for intrusion detection*
  - *Developed low-power embedded implementations of multi-object tracking*
  - *Developed automatic key-frame extraction (from videos) methods*
- **Signal Processing** Engineer at Institute of Cognitive Science Studies ***(Summer 2017 - Summer 2018)***
  - *Gathering, pre-processing, and post-processing of experimental neural data*
  - *Providing manual for ARTINIS fNIRS neural data acquisition devices*
  - *Developing a solution for interfacing with Matlab and gathering and processing data*
- Part-time private **programming/robotics/image processing** instructor ***(summer 2015 - current)***
  - *Taught fundamentals of Python Programming, Advanced Programming, and Data Structures with Python*
  - *Taught fundamentals of Raspberry Pi/Arduino interfacing*
  - *Taught basics of image processing in Matlab and openCV (both Python and C++)*
- **Calculus and programming** teacher assistant in Ghalam High-school ***(summer 2013, summer 2014)***
  - *Taught fundamentals of C Programming to high-school students*
  - *Helped to provide teaching material for Calculus course*

Notable Teaching Experience [view details]

- ***Lecturer*** *for* ***Robot Operating System (ROS2)*** *workshop (Deliware Group - Fall 2020)*
- ***Lecturer*** *for* ***Fundamentals of Linux Scripting*** *workshop (Deliware Group - Fall 2020)*
- ***Lecturer*** *for* ***Fundamentals of Reinforcement Learning*** *workshop (IPM - Summer 2019)*
- ***Lecturer*** *for* ***Fundamentals of Image Processing*** *workshop (IPM - Summer 2019)*
- ***Head*** *Teaching assistant of* ***Artificial Intelligence*** *course (Amirkabir University - Spring 2019)*
- ***Head*** *Teaching assistant of* ***Signals and Systems*** *course (Amirkabir University - Spring 2019)*
- ***Head*** *Teaching assistant of* ***Microprocessors Design*** *course (Amirkabir University - Spring 2019)*
- ***Lecturer*** *for* ***Fundamentals of Tensorflow*** *workshop (Amirkabir University - Fall 2018)*
- *Teaching assistant of* ***Data Mining*** *course (Amirkabir University - Fall 2018)*
- *Teaching assistant of* ***Artificial Intelligence*** *course (Amirkabir University - Fall 2018)*
- *Teaching assistant of* ***Signals and Systems*** *course (Amirkabir University - Fall 2018)*
- *Teaching assistant of* ***Microprocessors Design*** *course (Amirkabir University - Fall 2018)*
- *Teaching assistant of* ***Signals and Systems*** *course (Amirkabir University - Fall 2017)*
- *Teaching assistant of* ***Microprocessors Design*** *course (Amirkabir University - Fall 2017)*
- ***Head*** *Teaching assistant of* ***Electronic Circuits*** *course (Amirkabir University - Spring 2017)*
- ***Head*** *Teaching assistant of* ***Engineering Mathematics*** *course (Amirkabir University - Fall 2016)*
- *Teaching assistant of* ***Electronic Circuits*** *course (Amirkabir University - Spring 2016)*
- *Teaching assistant of* ***Logic Circuits*** *Design course (Amirkabir University - Fall 2015)*

Related Passed Online Courses

- ***Deep Learning*** *Specialization taught by professor Andrew Ng,* ***Stanford University***
- ***Machine Learning*** *Taught by professor Sanjoy Dasgupta,* ***UCSD***
- ***Reinforcement Learning*** *Specialization Taught by Martha and Adam White,* ***University of Alberta***
- ***Probabilities****: Science of Uncertainty in Data, Taught by professor John N. Tsitsiklis,* ***MIT***
- ***Linear Algebra*** *Taught by professor Gilbert Strang,* ***MIT***
- ***Computational Neuroscience*** *by Rajesh Rao,* ***UWashington*** ***[Certificate]***
- ***Cellular Mechanism of Brain (Neuroscience 1)*** *Taught by Carl Petersen,* ***EPFL*** ***[Certificate]***
- ***Simulation Neuroscience*** *Taught by Henry Markram,* ***EPFL*** ***[Certificate]***

Notable Projects

- *Fully Distributed Robotic Perceptual System (Object Detection, Segmentation and Stereo Depth Estimation) implementation on Jetson Nano and Raspberry Pi (ROS2/TensorRT/OpenCV) (Fall 2020)*
- *Embedded Multi-Object Tracking and Re-Identification for intrusion detection (C++/OpenCV) (Summer 2020)*
- *Analysis of I/O Properties of a Layer 4 Pyramidal Cell (Spring 2020)*
- *Realtime Intelligent Path-finding Agent with DQN Algorithm (Bachelor's Final Project - 2019)*
- *Hybrid (MPI+openMP) Based FFT on a RaspberryPi Cluster (Parallel Processing Course project - 2019)*
- *Training a Cheetah to Walk with Augmented Random Search (Computational Intelligence Lab - 2019)*
- *EEG Signal Classification for Brain-Computer Interfaces (Internship Side Project - 2018)*
- *Greenhouse Environment Monitor and Controller (ARM Cortex M4/RTOS) (Embedded Systems Course Project - 2017)*