Amin Fadaeinejad

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EDUCATION

University of Tehran, Tehran, Iran — Sep. 2016 - Jan. 2021(expected)
- B.Sc in Electrical Engineering (Control) — **GPA: 18.71/20 (3.91/4)**
  Rank 3^{rd} out of approximate 110 undergraduate students
- Minor in Computer Engineering — Sep. 2018 - Jan. 2021(expected)
  Passed a number of courses in Computer Engineering — **GPA: 18.08/20 (4/4)**

Allameh Helli High school, Kerman, Iran — Sep. 2012 - Jun. 2016
Diploma in Mathematics and Physics' Discipline
Affiliated with the National Organization for the Development of Exceptional Talents (NODET)

RESEARCH INTERESTS

- Machine Learning
- Machine Vision
- Deep Learning

HONORS AND AWARDS

- Ranked 3^{rd} out of approximate 110 undergraduate students (Ranked 2^{nd} in Control Engineering), school of Electrical and Computer Engineering(till now), University of Tehran
- Member of Iran's National Elites Foundation — Sep. 2016 - Present
- Ranked 394^{th} among more than 156,000 participants in Nationwide Universities Entrance Exam (B.Sc.). — Sep. 2016
- Passing the first stage of Physics Olympiad for two years — Jan. 2014 & Jan. 2015
- Ranked 23^{rd} in Sharif National Student Competition — Mar. 2015
- Ranked 3^{rd} in the country at the second stage of Paya Scientific League in physics — Jun. 2015

RESEARCH EXPERIENCE

B.Sc. Thesis — **Summer & Fall 2020**
- B.Sc Final Project (Currently working on)
  - Automatic car property detection system.
  - Implementing a new method or a proper network architect for the color and car model classification.

  Instructor: Dr. Reshad Hosseini

Internship
- HARA[1]: — **Summer 2019**
  - Implementing a Persian speech to text network with Persian data set (from Mozilla).
  - Learning Deep Speech, pytorch and other frameworks for the model.
  - Learning the basics of mathematics and theory behind the language model and acoustic model.
  - Using Python libraries such as Librosa, SpaCy, and ... in the process.

  Instructor: Dr. Reshad Hosseini
- Taarlab[2] — **Summer 2018**
  - Learning how to receive feedback data from Sanbot
  - Learning the basics of how to work with android studio.

  Instructor: Dr. Mehdi Tale Masouleh

[1] HARA is an AI start-up company based in Tehran engaged in applying state-of-the-art machine learning, natural language processing and computer vision techniques to commercial domains.

[2] Human and Robot Interaction Laboratory always uses new approaches to communicate with other research centers and researchers.

RELEVANT COURSES (Graduate courses are indicated by *)

- **Deep Learning with applications*** 19/20
  Instructor: Dr. Reshad Hosseini Spring 2020
- **Pattern Recognition***[3] 20/20
  Instructor: Prof. Babak N. Araabi Spring 2019
- **Machine Vision*** (current semester) TBA
  Instructor: Dr. Reshad Hosseini Fall 2020
- **Linear Algebra** 19.25/20
  Instructor: Dr. Farzad Rajaei salmasi Spring 2019
- **Digital Signal Processing** (current semester) TBA
  Instructor: Dr. Majid Badieirostami Fall 2020
- **Engineering Probability and Statistics** 19.5/20
  Instructor: Dr. Amir Masoud Rabiei Fall 2017
- **Algorithm Design 1** 19.9/20
  Instructor: Dr. Hamid Mahini Fall 2019
- **Data Structures** 17.6/20
  Instructor: Dr. Fathiyeh Faghih Spring 2019
- **Operational Research** 20/20
  Instructor: Mohammad Shokri Fall 2019
- **Advanced Programming** 17.9/20
  Instructor: Dr. Ramtin Khosravi Fall 2019
- **Discrete Mathematics** 18.75/20
  Instructor: Dr. Siamak Mohammadi Fall 2018
- **Mechatronics** 20/20
  Instructor: Dr. Mehdi Tale Masouleh Spring 2019

COURSE PROJECTS (The GitHub's code are hyperlinked)

Machine Learning Problem [GitHub] *Fall 2020*

- Implementing a Fast KNN model by using the idea of paper Fast k-Nearest Neighbour Search via Prioritized DCI from scratch. [GitHub]

Machine Vision Course Projects (Current Semester) [GitHub] *Fall 2020*

- Analyzing images in the frequency domain, implementing Histogram Equalization, and Gaussian Image Pyramid resampling method. [GitHub]
- Implementing a line detection model using Marr-Hilderth and Canny Edge Detector algorithm. Race recognition by comparing feature points. [GitHub]
- Making Panorama images by using RANSAC algorithm. [GitHub]
- Using the Structure From Motion algorithm for depth detection, and camera calibration(python). [GitHub]

Deep Learning with Application Course Projects [GitHub] *Spring 2020*

- Implementing the Hierarchical Multi-Scale Attention Network for semantic segmentation using Pytorch library. [GitHub]
- Implementing 2 layers of Deep-RBFNetwork with robust classification and rejection and an adversarial attack using FGSM method from scratch just by using NumPy and pandas libraries. [GitHub]
- Implementing Human Pose Estimation with CNN(AlexNet) using Pytorch library. [GitHub]
- Implementing an Anomaly Detection network with auto encoders using Pytorch library [GitHub]
- Implementing Sentimental Analysis network with unidirectional, bidirectional and pyramid LSTM networks using Pytorch library. [GitHub]
- Tuning a pre-trained BERT model over a new data set using Pytorch library. [GitHub]
- Implementing the encoder section of the Transformer Network for speech recognition using Pytorch libraries. [GitHub]

Pattern Recognition Course Projects [GitHub] *Spring 2019*

- Implementing Parametric and Non-parametric PDF Estimation Algorithms using NumPy.[GitHub]
- Implementing the Expectation-Maximization (EM) Algorithm for Gaussian Mixture Density Model using NumPy. [GitHub]
- Implementing Dimensionality Reduction Algorithms(PCA,LDA) using NumPy. [GitHub]
- Implementing Classifiers such as Bayes' Optimal Classifier, SVM using NumPy. [GitHub]
- Implementing Classifier such as MLP/RBF Networks using NumPy. [GitHub]
- Implementing various Clustering Algorithms such as Agglomerative Hierarchical, Sequential, and k-means using NumPy. [GitHub]

Mechatronics [GitHub] *Spring 2019*

- Digit recognition using OpenCV python. [GitHub]

Systems Analysis Course Projects [GitHub] *Spring 2018*

- Image Compression with encoder, decoders using MATLAB. [GitHub]

[3] Has the same syllables as the Machine learning course in other universities.

TEACHING EXPERIENCE

Teaching Assistant, *University of Tehran*

- **Pattern Recognition[Grad Course]**
  Teaching Assistant — Fall 2019
  Instructor: Prof. Babak N. Araabi
- **Engineering Probability and Statistics**
  Teaching Assistant — Fall 2019
  Instructor: Dr. Behnam Bahrak
- **Linear Algebra**
  Teaching Assistant — Spring 2020
  Instructor: Prof. Mohammad Javad Yazdanpanah
- **Introduction to Computing systems and programming**
  Teaching Assistant — Fall 2018
  Instructor: Dr. Manouchehr MoradiSabzevar
- **Intelligent Systems**
  Head Teaching Assistant — Fall 2020
  Teaching Assistant — Fall 2019
  Instructor: Dr. Reshad Hosseini
- **Discrete Mathematics**
  Teachong Assistant — Spring 2020
  Instructor: Dr. Siamak Mohammadi
- **Engineering Mathematics**
  Head Teaching Assistant — (4 Semesters[4])
  Instructor: Dr. Mehdi Tale Masouleh
- **Operational Research**
  Teaching Assistant — Fall 2020
  Instructor: Mohammad Shokri

Lecturer, *Kerman's High schools*

- Volunteered to teach physics to students attending Olympiad and University entrance exam.

SKILLS

- **Programming**
  - Proficient in C/C++, Python, MATLAB, Verilog, ARM, LaTeX
  - Familiar with HTML, CSS, Java
- **Frameworks, Softwares, Libraries and Operational Systems**
  - Pytorch, NumPy, OpenCV(python & C++), scikit-learn, Deep Speech, Modelsim, Quartus II, Multisim, Proteus, Linux

LANGUAGES

- Persian: Native
- English: Fluent, **TOEFL iBT**(Will be taken on 9th January)

REFERENCES (All the mentioned instructors have a hyperlink)

- Dr. Reshad Hosseini
  - PhD Graduated from Technical University of Berlin
  - Email: reshad.hosseini@ut.ac.ir
  - Website: `https://ece.ut.ac.ir/en/~reshad.hosseini`
- Dr. Mehdi Tale Masouleh
  - PhD Graduated from Laval University
  - Email: m.t.masouleh@ut.ac.ir
  - Website: `https://ece.ut.ac.ir/en/~m.t.masouleh`
- Prof. Babak N. Araabi
  - PhD Graduated from Texas A&M University
  - Email: araabi@ut.ac.ir
  - Website: `https://ece.ut.ac.ir/en/~araabi/`

For others available upon request

[4] Fall 2019 & 2018, Spring 2019 & 2020