

# Armin Shafiee Sarvestani

UNDERGRADUATE ELECTRICAL ENGINEERING STUDENT

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## Education

### Sharif University of Technology

B.S. IN ELECTRICAL ENGINEERING SPECIALIZED IN DIGITAL SYSTEMS

- GPA: 18.44/20.00 - 3.95/4
- Last Two Years GPA: 18.85/20.00 - 3.97/4

Tehran, Iran

Sep. 2016 - Present

### National Organization for Development of Exceptional Talents

JUNIOR HIGH SCHOOL AND HIGH SCHOOL - SPECIALIZED IN MATH AND PHYSICS

- GPA: 20.00/20.00

Shiraz, Iran

Sep. 2009 - Sep. 2016

## Research Interests

- Deep Learning & Machine Learning
- Video Processing & Image Processing
- Computer Vision
- Natural Language Processing
- Artificial Intelligence

## Research Experience

### Multimedia and Signal Processing Lab | Sharif Uni. of Tech. - Video Quality Assessment Project, Distinguishing Up-scaled Videos from Original Videos for Every Possible Resolution, Detecting the Rate of Up-scaling, Detecting the Software Used to Upscale the Video(In Progress), All by Deploying Deep Neural Networks.

Tehran, Iran

RESEARCH ASSISTANT UNDER SUPERVISION PROF. ARASH AMINI

Feb. 2020 - Present

- achieving 99.33% accuracy on test data-set of 744 videos in the task of distinguishing Up-scaled videos from Original videos.
- achieving 96.12% accuracy on test data-set of 232 videos in the task of detecting the rate of up-scaling.
- Collecting a vast data-set of short (10-30 seconds) original videos with different resolutions such as 1080p, 720p, 480p and etc.
- Upscaling gathered original videos to different resolutions using five famous and sophisticated software applications, leading to 90GB dataset of videos till now.
- Extracting different features from video frames, focusing on 2D FFT of the frames as well as measuring blurriness of the frames.
- Working with different Deep learning frameworks, focusing on PyTorch and Keras, and utilizing the best features these frameworks offer.
- Working with PyTorch C++ API (libtorch) to Define our neural networks in C++ to add our developed models into "Namakav" software
- Working with OpenCV library in C++ and Python and getting skilled in using its functions and features to optimize different image processing codes.

### Secure Communications and Machine Learning Lab | University of Tehran - Developing a Convolutional Neural Network for Classification Task on Google "Quick, Draw!" Huge Data-set, Real-time Painting Classification by Designing a Software Application Like Google "Quick, Draw!".[\[GitHub\]](#)

Tehran, Iran

RESEARCH INTERN UNDER SUPERVISION PROF. HAMID BEHROOZI AND PROF. MOHAMMAD ALI AKHAEI

Jul. 2019 - Sep. 2019

- Learning basic concepts of Deep Learning, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Long Short-Term Memory (LSTM) and etc.
- Learning PyTorch, Keras and TensorFlow and working with these frameworks.
- Working with different Python libraries such as Numpy, SciPy, Pandas, Scikit-learn, Seaborn, PIL and etc.
- Learning PyQt5 library and developing a software application where user can draw an image to be guessed by the developed model.

## Technical Skills

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<b>High Level Languages</b>	Python, C/ C++, MATLAB, Java.
<b>Other Languages</b>	Verilog, CUDA GPU Programming, Bash Script, MIPS/ARM/AVR Assembly.
<b>Machine Learning</b>	TensorFlow, PyTorch, Keras, Scikit-learn, Numpy, Pandas, OpenCV, Gensim, PIL.
<b>Simulation and Design</b>	Xilinx ISE, MPLAB, ModelSim, Quartus, Proteus, Mars, PSpice, HSpice, Altium Designer.
<b>Operating Systems</b>	Ubuntu

## Honors & Awards

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2020	<b>Ranked 3rd among 30 Students</b> , of Digital Systems Specialization, Department of Electrical Engineering, Sharif University of Technology	<i>Tehran, Iran</i>
2020	<b>Ranked in the top 10%</b> , Department of Electrical Engineering, Sharif University of Technology	<i>Tehran, Iran</i>
2016 - Present	<b>Recipient</b> , of the grant for undergraduate students, courtesy of the National Elite Foundation	<i>Tehran, Iran</i>
2016 - Present	<b>Member</b> , of the National Elite Foundation of Iran	<i>Tehran, Iran</i>
2016	<b>Ranked 46th among 160000+ Students</b> , National University Entrance Exam - Math and Physics	<i>Shiraz, Iran</i>
2009	<b>Admitted</b> , in the entry exam to NODET High Schools (National Organization for the Development of Exceptional Talents)	<i>Shiraz, Iran</i>

## Selected Course Projects

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**Design and Implementation of Deep Learning Models for Image Captioning Task on COCO Data-set, Using Transfer Learning and Data Augmentation for Training CNN Model to Extract Features (While Reaching 97.3% Accuracy on Test Data-set), Using Pre-trained CBOW Model for Word Embeddings, Using Attention Layer and Bidirectional LSTM for Training RNN Model to Generate Captions.**[\[GitHub\]](#)

SUPERVISED BY PROF. E. FATEMIZADEH

*Fall 2019*

**Design and Implementation of Conditional Variational AutoEncoder (C-VAE) as Well as Generative Adversarial Network (GAN) on MNIST Data-set.**[\[GitHub\]](#)

SUPERVISED BY PROF. E. FATEMIZADEH

*Fall 2019*

**Implementation of LSTM-Based Seq2Seq Encoder-Decoder and Skip-Gram Models on a Persian Text Data-set Called 'Shahname Ferdowsi'.**[\[GitHub\]](#)

SUPERVISED BY PROF. E. FATEMIZADEH

*Fall 2019*

**Analysing "Titanic" Data-set and Extract Useful Features by Data Analysis Techniques as Well as Implementation and Optimization of Logistic Regression, K-NN, SVM, Naive Bayes Classifier, Random Forest and Neural Network Methods on the Analysed Data-set to Achieve Highest Possible Accuracy on Classification Task(Predicting the Survival of Titanic Passengers), Reaching 92% Test Accuracy, Graded as the Best Work of the Course.**[\[GitHub\]](#)

SUPERVISED BY PROF. S. SALEH KALEYBAR

*Fall 2019*

**Design and Implementation of a CNN Model with the Least Number of Layers Possible to Achieve 90+ Accuracy for Classification of CIFAR-10 Data-set, Using Different Techniques Like Data Augmentation and Learning Rate Scheduling, Graded as the Best Work of the Course.**[\[GitHub\]](#)

SUPERVISED BY PROF. S. SALEH KALEYBAR

*Fall 2019*

**Implementation of K-NN Classification Algorithm Using CUDA on a GPU, Which was Capable of Classifying Huge Data-sets of up to  $2^{30}$  Samples Efficiently and Fast.**[\[GitHub\]](#)

SUPERVISED BY PROF. M. HASHEMI

*Spring 2019*

## Implementation of Hough Transform Method to Detect Lines and Circles in Both Noisy and Original Images in MATLAB. [\[GitHub\]](#)

ONLINE COURSE

Fall 2020

## Implementation of Wireless LAN Physical Layer (PHY) Standard Both in Transmitter and Receiver Ends on FPGA.

SUPERVISED BY PROF. M. SHABANY

Spring 2020

## Implementation of Safety Box Password Panel in ISE Design Suit Using SPARTAN6 FPGA.

SUPERVISED BY PROF. N. MOHAMMADZADE

Fall 2017

## Implementation of Pipe-lined MIPS Multi-Cycle and Single-Cycle Datapath and Controller. [\[GitHub\]](#)

SUPERVISED BY PROF. M. MOVAHEDIN

Spring 2018

## Simulation of 4-QAM Digital Communication System Using LMS Algorithm-based Equalizer for the Channel Equalization. [\[GitHub\]](#)

SUPERVISED BY PROF. H. BEHROOZI

Fall 2018

## Implementation of PAM in Binary Digital Communication. [\[GitHub\]](#)

SUPERVISED BY PROF. H. BEHROOZI

Spring 2018

## Implementation of a Semi-Graphical Game in C Language, As the Final Project of Principles of Computer Programming Course

SUPERVISED BY PROF. R. TAHERKHANI

Fall 2016

## Designing Amplifier of Temperature Dependent Torque Generator

SUPERVISED BY PROF. M. FAKHARZADEH

Spring 2018

## Teaching Experience

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Fall 2020	<b>Deep Learning(Graduate Course)</b> , Task: Designing, supporting and grading of homework	Prof. E. Fatemizadeh
Fall 2020	<b>Computer Architecture and Microprocessors</b> , Head TA of the course, Lab assistant, Homework and exam grading	Prof. S. Bagheri Shouraki
Spring 2020	<b>Pulse Technique and Digital Circuits</b> , Homework grading	Prof. S. Bagheri Shouraki
Fall 2019	<b>Computer Architecture and Microprocessors</b> , Lab assistant	Prof. S. Bagheri Shouraki
Spring 2019	<b>Computer Architecture and Microprocessors</b> , Lab assistant	Prof. M. Hashemi
Spring 2019	<b>Signals and Systems</b> , Holding Tutorial Class on MATLAB	Prof. H. Behroozi

## Selected Courses

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- Deep Learning (Special Topics in BioMed) (Graduate Course), 19.5/20.0, Prof. E. Fatemizadeh
- Machine Learning, 19.8/20.0, Prof. S. Saleh Kaleybar
- Machine Learning and Vision Lab, Ongoing Course, Prof. H. Mohammadzade
- Principles of Image Processing, Ongoing Audited Course
- Introduction to Computer Vision, Ongoing Online Course
- Machine Learning, Online Course, Prof. Andrew Ng

- Data Structures and Algorithms, 18.4/20.0, Prof. S. Saleh Kaleybar
- Parallel Programming (Graduate Course), 19.0/20.0, Prof. M. Hashemi
- Digital Signal Processing, 19.0/20.0, Prof. M. Babaie-Zadeh
- Probability and Statistics, 19.3/20.0, Prof. M. Nayebi
- Computer Architecture and Lab, 20.0/20.0, Prof. M. Movahedin
- Pulse Technique and Digital Circuits, 20.0/20.0, Prof. S. Bagheri Shouraki
- Communication Systems, 19.6/20.0, Prof. H. Behroozi
- Signals and Systems, 18.3/20.0, Prof. H. Behroozi

## Personal Traits

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**Highly motivated and eager to learn new things.**

Responsible, Focused, Committed, Adventurous, Cheerful, Flexible, Honest.

Ability to work as an individual as well as in group.

## Languages

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### Persian

NATIVE

### English

FLUENT

TOEFL IBT TEST: **OVERALL: 112**

- READING: 30
- LISTENING: 30
- SPEAKING: 25
- WRITING: 27