Armin **Shafiee Sarvestani**

B.Sc. in Electrical Engineering

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Education

Sharif University of Technology — *Tehran, Iran*

B.Sc. in Electrical Engineering Specialized in Digital Systems — *Sep. 2016 - Feb. 2021*

- GPA: 18.22/20.00 - 3.87/4

National Organization for Development of Exceptional Talents — *Shiraz, Iran*

Junior High School and High School - Specialized in Math and Physics — *Sep. 2009 - Sep. 2016*

- GPA: 20.00/20.00

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 Projects, 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, All by Deploying Deep Neural Networks. — *Tehran, Iran*

Research Assistant Under supervision Prof. Arash Amini — *Feb. 2020 - Mar.2021*

- 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.
- achieving 82.33% accuracy on test data-set of 232 videos in the task of software detection.
- Collecting a vast data-set of short (10-30 seconds) original videos with different resolutions such as 1080p, 720p, 480p, 360p, etc.
- Upscaling gathered original videos to different resolutions using five famous and sophisticated software applications, leading to 90GB dataset of 2706 videos.
- 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.
- Developing a code in C++ that receives a video as input and decides about the originality of the video and its rate of up-scaling in almost real-time.
- Optimizing ”Namakav” software blurriness function to operate in real-time exploiting OpenCV functions
- Implementation of single image noise level estimation for blind denoising algorithm in C++

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 Akhaee — *Jul. 2019 - Sep. 2019*

- Learning basic concepts of Deep Learning, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Long Short-Term Memory (LSTM), 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

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

Honors & Awards

2021	**Recipient**, of the Graduate Research Studentship (GRS) funding, provided by Prof. Zhou Wang, University of Waterloo	*Waterloo, Canada*
2021	**Recipient**, of the International Doctoral Student Award (IDSA), provided by Graduate Studies and Postdoctoral Affairs, University of Waterloo	*Waterloo, Canada*
2020	**Ranked 3rd among 30 Students**, of Digital Systems Specialization, Department of Electrical Engineering, Sharif University of Technology	*Tehran, Iran*
2020	**Ranked in the top 10%**, Department of Electrical Engineering, Sharif University of Technology	*Tehran, Iran*
2016 - 2021	**Recipient**, of the grant for undergraduate students, courtesy of the National Elite Foundation	*Tehran, Iran*
2016 - 2021	**Member**, of the National Elite Foundation of Iran	*Tehran, Iran*
2016	**Ranked 46th among 160000+ Students**, National University Entrance Exam - Math and Physics	*Shiraz, Iran*
2009	**Admitted**, in the entry exam to NODET High Schools (National Organization for the Development of Exceptional Talents)	*Shiraz, Iran*

Selected Course Projects

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

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

Selected Courses

- 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, 14.6/20.0, Prof. H. Mohammadzade

- Principles of Image Processing, Ongoing Audited Course
- Introduction to Computer Vision, Ongoing Audited 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

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

Persian

NATIVE

English

FLUENT

TOEFL IBT TEST: **OVERALL: 112**

- Reading: 30
- Listening: 30
- Speaking: 25
- Writing: 27

References

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