Ali Gholami

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EDUCATION

B.S. Computer Engineering @ Amirkabir University of Technology
[Global Rank of 97 in CE] @ USNEWS
[National Rank of 2] @ ARWU
GPA: 3.6/4

Mathematics & Physics Diploma @ Kamal Highschool
GPA: 19/20

RESEARCH INTERESTS

- Visual Question Answering
- Image Captioning
- Image Segmentation
- Deep Learning

RELATED COURSES

Machine Learning @ Amirkabir University of Technology
Computer Vision @ Udacity
Deep Learning @ Udacity
cs231n @ Stanford University

RESEARCH EXPERIENCE

CEIT @ Amirkabir University of Technology — Dec 2018 – Present
Computer Vision — Pattern Recognition

- Implementation of *AlexNet CNN* architecture using *Tensorflow*.
- Implementation of a *DCGAN* to draw *MNIST* characters using *Tensorflow*.
- Implementation of a *Variational Autoencoder* using *Tensorflow*.
- Implementation of various *Deep Learning* techniques using *Tensorflow*.

TECHNICAL REPORTS

Statistical Pattern Recognition
Advisor: Prof. Mohammad Rahmati

- *Introduction to Linear Algebra – Statistics – Probabilities* [docs]
- *LDA & QDA – Bayesian Classification – Error Bounds* [docs]

Data Mining
Advisor: Prof. Ehsan Nazerfard

- *Association Rule Mining – Feature Engineering* [docs]
- *Decision Tree Classifier – Data Cleaning* [docs]

Design & Implementation of Programming Languages
Advisor: Prof. Mehran S. Fallah

- *Induction & Denotational Semantics – Lambda Calculus* [docs]
- *Lisp & Garbage Collection – Higher-order Functions* [docs]
- *Algol & Meta Language – ML Data Types & Patterns* [docs]
- *Type Safety & Type Inference – Polymorphism* [docs]

Computer Networks
Advisor: Prof. Siavash Khorsandi

- *Introduction to Computer Networks* [docs]

- *Packet Transmission Approaches – Congestion Control* [docs]
- *Queuing & Delay Analysis* [docs]
- *Queuing & Delay Analysis – Network Protocols* [docs]

Multi-core Programming
Advisor: Prof. Mahmoud Momtazpour
- *Parallel Architectures – Speedup Metrics* [docs]
- *OpenMP – Parallelization of Matrix Addition/Multiplication* [docs]
- *OpenMP – Parallelization of Merge-sort* [docs]

WORK EXPERIENCE

Internship @ Arvan Cloud — Jun – Sep 2017
Web Application Development
- *HTML, CSS, PHP, Laravel, Javascript, ECMAScript, Node.js, Vue.js, React.js*

Internship @ Fandogh — Jun – Aug 2017
Mobile Application Development
- *Java, React Native*

TEACHING EXPERIENCE

T.A. @ CEIT @ Amirkabir University of Technology — Sep – Dec 2017
Microprocessors & Assembly Programming
Advisor: Prof. Mahdi Homayounpour

T.A. @ ENG @ Kharazmi University of Tehran — Sep – Dec 2015
Foundations of Programming in C++
Advisor: Dr. Azadeh Mansouri

TALKS

Machine Learning at Scale — Oct 2017
- Based on the paper *Rules of Machine Learning* by Dr. Martin Zinkevich.

Energy Awareness — July 2017
- Based on the paper *Energy-aware adaptation for mobile applications* by Dr. Jason Flinn.

Metasploit Framework — May 2017
- Introduction to *Metasploit Framework* & *Social Engineering* techniques.

HONORS

Admitted to **Amirkabir University of Technology** among all bachelor students at Computer Engineering Department, Kharazmi University of Tehran. — Aug 2018

Ranked top 3 among all bachelor students at Computer Engieering Department, Kharazmi University of Tehran. — July 2016

Ranked top 0.006 in the Nationwide University Entrance Exam among all students in Mathemathics and physics (approximately 250,000). — July 2014

SKILLS

Languages Persian (*native*), English (*advanced working proficiency*)

Programming *Python, VHDL, C/C++, Java, ARM Assembly, AVR Assembly, Javascript, HTML/CSS, LaTeX, Racket, ML, Scheme.*

Tools & Platforms *Tensorflow, scikit-learn, Numpy, Pandas, Matplotlib, Weka, Arduino, ARM, AVR, CodeVision, Xillinx Vivado, ModelSim, Atmel Studio, Cadence PSpice, Keil, Dr. Racket, MongoDB, PostgreSQL, MySQL, Visual Studio, TeXstudio.*

NOTABLE PROJECTS

Annealing, *Data Cleaning & Preprocessing*
- Preprocessing and cleaning the dataset of annealing. Reached 98% accuracy. [docs] [code]

Titanic, *Data Science & Feature Engineering*
- Prediction of Titanic survivals as a part of Kaggle competition. Reached an Accuracy of 83% and Recall of 76%. [code]

MNIST-Drawer, *Variational Autoencoder*
- Implementation of a *Variational Autoencoder* to draw *MNIST* dataset characters using *Tensorflow*. [code]

notMNIST, *Convolutional Neural Network*
- Implementation of multiple machine learning classifiers and regularization techniques on the *notMNIST* dataset using *Tensorflow*. [code]

Freeman, *Hardware Programming & Co-design*
- Implementation of a *Parking Controller* & *Security Controller* using *VHDL*. [code]

Numex, *Functional Programming*
- Implementation of an *Advanced Functional Interpreter* using *Racket*. [code]

Hornburg, *Deep Learning Basics*
- Implementation of *Principal Machine Learning Algorithms* using *Python*. [code]

Iris, *Multi-nomial classification*
- Multi-nomial classification of *Iris* dataset using *scikit-learn*. [code]

ARMHE, *Advanced RISC Machine Programming*
- Implementation of the *Histogram Equalization* algorithm on the *STMF32F407VGT6* with *ARMv4T* architecture using *ARM Assembly*. [code]

Cinder, *Low Level Programming*
- Implementation of a basic *Operating System* with *C*. [code]

Sockets, *Socket Programming*
- Implementation of various types of *Sockets* in *Interprocess Communication* & *TCP/IP Protocol* with *C*. [code]

Toofan, *Android Application Development*
- Implementation of a *Weather Forecast Application* on the *Android* platform using *Java* & *Android Studio*. [code]

Huffman, *Huffman Coding*
- Implementation of the *Huffman Text Compression Algorithm* using *Java*. [code]

2048, *C++ Programming*
- Implementation of the *2048 Puzzle Game* with various gameplay tweaks using

C++. [code]

Manobase, *VHDL Programming*

- Implementation of the *Morris Mano's Base Computer* using *VHDL*. [code]