

Ali Gholami

COMPUTER ENGINEERING & INFORMATION TECHNOLOGY DEPARTMENT
AMIRKABIR UNIVERSITY OF TECHNOLOGY

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EDUCATION

B.S. Computer Engineering @ AMIRKABIR UNIVERSITY OF TECHNOLOGY

[Global Rank of 165 in CS]

GPA: 3.6/4

[National Center of Excellence in A.I.]

Mathematics & Physics Diploma @ KAMAL HIGHSCHOOL

GPA: 19/20

RESEARCH INTERESTS

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

RELATED COURSES

Machine Learning @ AMIRKABIR UNIVERSITY OF TECHNOLOGY

Computer Vision @ UDACITY

Deep Learning @ UDACITY

cs231n @ STANFORD UNIVERSITY

OpenMP @ INTEL

RESEARCH EXPERIENCE

CEIT @ AMIRKABIR UNIVERSITY OF TECHNOLOGY

Dec 2017 – Present

Computer Vision / Pattern Recognition

- Implementation of *AlexNet CNN* architecture using *Tensorflow*. [\[code\]](#)
- Implementation of a *DCGAN* to draw *MNIST* using *Tensorflow*. [\[code\]](#)
- Implementation of a *Variational Autoencoder* using *Tensorflow*. [\[code\]](#)
- Implementation of various *Deep Learning* techniques using *Tensorflow*. [\[code\]](#)

TECHNICAL REPORTS

Statistical Pattern Recognition

Advisor: Prof. Mohammad Rahmati

- *Introduction to Linear Algebra – Statistics – Probabilities* [\[docs\]](#)
- *Bayesian Decision Boundaries – Bayes Error Bounds – Risk Minimization* [\[docs\]](#)
- *Maximum Likelihood & Bayesian Parameter Estimation* [\[docs\]](#)
- *Kernel Density Estimation – KNN Density Estimation* [\[docs\]](#)

Data Mining

Advisor: Prof. Ehsan Nazerfard

- *Association Rule Mining – Feature Engineering* [\[docs\]](#)
- *Decision Tree Classifier – Data Cleaning* [\[docs\]](#)
- *Naïve Bayes Classifier – Spam Filtering – Text Processing* [\[docs\]](#)

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 & Network Protocol Stack 1* [\[docs\]](#)
- *Queuing & Delay Analysis & Network Protocol Stack 2* [\[docs\]](#)
- *Multiplexing & Multiple Access Medium – IETF* [\[docs\]](#)
- *Application Layer Protocols; HTTP – FTP – SMTP – CDN – DNS* [\[docs\]](#)
- *Reliable Data Transfer; Stop & Wait Protocol* [\[docs\]](#)
- *Reliable Data Transfer; Go-Back-N & Selective Retransmit Protocols* [\[docs\]](#)

Multi-core Programming

Advisor: Prof. Mahmoud Momtazpour

- *Parallel Architectures – Speedup Metrics* [\[docs\]](#)
- *OpenMP – Parallelization of Matrix Computations* [\[docs\]](#)
- *OpenMP – Parallelization of Sort Algorithms* [\[docs\]](#)
- *Nvidia GPUs Architecture – Memory Types – GPU Characteristics* [\[docs\]](#)

Engineering Ethics

Advisor: Prof. Ali Dizani

- *A Deep Analysis of Ethical Dilemmas in Computer Engineering.* [\[docs\]](#)

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

[\[Resources\]](#)

T.A. @ ENG @ KHARAZMI UNIVERSITY OF TEHRAN Sep – Dec 2015

Foundations of Programming in C++

Advisor: Dr. Azadeh Mansouri

[\[Resources\]](#)

HONORS

Admitted to Amirkabir University of Technology among all Aug 2018

bachelor students at Computer Engineering Department, Kharazmi University of Tehran.

Member of Executive Team at the 17th [International Collegiate](#) Nov 2017

[Programming Contest](#) held at the [Amirkabir University of Technology](#).

Participated in the 4th national programming contest contest held Sep 2017

at the [Sharif University of Technology](#) as a member of *Morph* team.

Ranked top 3 among all bachelor students at Computer Engineering July 2016

Department, [Kharazmi University of Tehran](#).

Participated in the [Avatech](#)'s Educational Startup Weekend held at the [University of Tehran](#), as a member of *3-mim* team. Jun 2015

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

Elected as the **tidiest** student at the campus of international summer school, [Institute Monte Rosa](#), Montreux, Switzerland. Aug 2011

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.

SKILLS

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

Data Science *Python, Scikit-learn, Numpy, Pandas, Matplotlib, Weka.*

Computer Vision & Deep Learning *Tensorflow, OpenCV.*

Parallel Processing Frameworks *C/C++ @ OpenMP, Intel VTune Amplifier, Intel Inspector, C/C++ @ CUDA, Nsight Monitor.*

Functional Programming *Racket, ML, Scheme.*

Hardware Design *VHDL, Verilog, HLS, AVR, ARM, Arduino, Xilinx Vivado, ModelSim, Atmel Studio, Proteus, Cadence PSpice, Keil.*

Mobile Application Development *Java, React Native, Android Studio.*

Web Application Development *HTML/CSS, Javascript, Node.js, React, PHP, Laravel.*

Databases *PostgreSQL, MySQL, MongoDB.*

NOTABLE PROJECTS

KDEPlot, Density Estimation

- Implementation of 1-D and 2-D Kernel Density Estimation Methods in Python using Numpy and Matplotlib Only. [\[code\]](#)

KNNCC, Image Classification

- Implementation of a K-Nearest Neighbour *CIFAR-10* Classifier in Python. [\[code\]](#)

Paralab, Parallel Processing

- Implementation of frequent parallel problems using OpenMP and Intel Parallel Studio in C. [\[code\]](#)

Annealing, Data Cleaning & Preprocessing

- Preprocessing and training the dataset of annealing. Reached 98% accuracy with a decision tree classifier.

[\[docs\]](#) [\[code\]](#)

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*.

[\[code\]](#)

Chronicle, *Compiler Design*

- Implementation of a *lexical analyzer*, *syntax analyzer* and a *partial code generator* using *Lex & Yacc* in *Java*.

[\[code\]](#)

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*.

[\[code\]](#)