

# 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* [\[docs\]](#)

**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* [\[docs\]](#)

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

Aug 2018

**Member of Executive Team** at the 17<sup>th</sup> [International Collegiate Programming Contest](#) held at the [Amirkabir University of Technology](#).

Nov 2017

**Participated** in the 4<sup>th</sup> national programming contest held at the [Sharif University of Technology](#) as a member of *Morph* team.

Sep 2017

**Ranked top 3** among all bachelor students at Computer Engineering Department, [Kharazmi University of Tehran](#).

July 2016

**Participated** in the [Avatech's](#) Educational Startup Weekend held

Jun 2015

at the [University of Tehran](#), as a member of *3-mim* team.

**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*.

[\[code\]](#)