S.Alireza Moazeni

COMPUTER AND INFORMATION TECHNOLOGY ENGINEERING

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Education

Amirkabir University of Technology (AUT)   *Tehran, Iran*
BACHELOR OF SCIENCE   *Sep. 2015 - present*

Computer Engineering   *Jan. 2018-2020 (Expected)*

- GPA (over 137/140 credits)
    - Total: **18.36 out of 20**
    - Cumulative GPA **(3.84/4.00)**

- Selected courses **(The complete list is available on my website.)**
    - Official

        - Principles of Computational Intelligence: 20/20 (4/4)
        - Principles and Applications of A.i.: 18.61/20 (4/4)
        - Data Mining: 19.5/20 (4/4)
        - Information Retrieval : 19.15/20 (4/4)
        - Linear Algebra: 19.9/20 (4/4)
        - Probability and Statistics: 20/20 (4/4)
        - Engineering Mathematics: 19.6/20 (4/4)
        - Algorithm Design: 20/20 (4/4)
        - Advanced Programming: 20/20 (4/4)
        - Computer Networks: 20/20 (4/4)
        - Research Methods and Report Writing: 18.5/20 (4/4)
        - Web Programming: 20/20 (4/4)

    - Online
        * Deep Learning A-Z™: Hands-On Artificial Neural Networks, Udemy
        * Deep Learning Advanced Computer Vision, Udemy
        * Machine learning, Prof. Andrew NG, Stanford University, Coursera
        * Neuroplasticity 2.0 Modern Neuroscience To Rewire Your Brain, Udemy

Electrical Engineering   *Sep. 2015-2017*

At first, I started my education in Electrical Engineering; then I changed my major to Computer Engineering because of my interest and working experience.

National Organization for Development of Exceptional Talents (NODET)   *Tehran, Iran*
DIPLOMA IN MATHEMATICS AND PHYSICS DISCIPLINE   *Sep. 2011 - Sep. 2015*

- **GPA: 19.65/20**

Research Interests

- **Deep Learning**
- **Computer Vision**
- **Neuroscience**
- **Robotics**
- **Computer Graphics**
- **Computational Geometry**

Experiences

i-Cliqq (Maya Stitch)   *Tehran, Iran*

A.I. Developer and Product Management   *May. 2016 - May. 2020*

i-Click Company is one of the top companies in the embroidery and sequins industry that produces professional embroidery software. My main activity in this company started with launching an intelligent system in the field of embroidery. Maya i-Box is an innovative and revolutionary software that uses the latest programming technologies involving artificial intelligence; it allows a new user who never digitized an embroidery design to create a well-optimized and ready-to-use DST design file. Some of this program's primary functions include a ***photo to embroidery***, ***photo to sequin***, ***photo to cross stitches***, and ***digitize the design created with a smart pencil on a touch screen***. We have used ***image processing*** techniques such as ***automatic color reduction*** (embroidery machines only support 2-14 colors), ***noise reduction***, ***edge detection***, ***objects***, and ***shapes detection***. Due to the work's vector nature, we used high-level ***computational geometry*** techniques, ***graph algorithms***, and ***mathematics***. Some of the notable challenges we dealt with included converting ***image pixels to vectors and polygons***, using ***skeletal detection algorithms***, ***divide complex polygons*** into ***simpler polygons*** to fill them with stitching, and ***optimally connecting the separated results*** with the help of the ***traveler salesman problem***. ***Security*** and the ***application's protection*** was a significant challenge that we solved by using ***physical locks*** to protect the app and some ***code transfers***. The product is ***Qt(C++)-based*** and runs on ***NanoPC boards***.

Teaching Assistant   *Tehran, Iran*

Amirkabir University of Technology   *Spring 2019 - Fall 2019*

- Internet of Things
    - Instructor: Dr. Rasti, Summer 2020
- Computational Intelligence
    - Instructor: Dr. Ebadzadeh, Fall 2019
- Computer Networks
    - Instructor: Dr. Sabaei, Fall 2019
- Data Structure and Algorithms Design
    - Instructor: Dr. Bagheri, Spring 2019

Projects

Bachelor Projects   *Tehran, Iran*

Amirkabir University of Technology   *Spring-Summer 2020*

- **Neural Style Transfer Web Application (Bachelor Project)**
    - As my bachelor project, I designed and implemented image style transfer using CNNs as a web application. This application gets two images from the user (content and style images) and outputs a painted image resulting from applying the artwork style to the content image. The main goals and challenges that I have addressed in this project are 1- Reconstruction of the VGG19 network to remove the classification layers, get output from different layers, and use AVG pool layers instead of Max pool layers. 2- Preparing the input images in the acceptable format of VGG19. 3- Implementation and comparison of different optimization functions (here we have optimization according to the inputs instead of model parameters). 4- High-frequency noise reduction in the final output by adding a parameter to the total loss function, which is the sum of squared noise in the X-axis and Y-axis.
    - Supervisor: Dr. Nazerfard

Academic Projects

AMIRKABIR UNIVERSITY OF TECHNOLOGY

- **Video Objects Detection Using SSD Algorithm**

  – I designed and implemented a system that uses CNN to detect objects in a photo or video in real-time using the SSD (Single-Shot MultiBox Detector) algorithm. I will address challenges such as detecting multiple objects in an image optimally, the coverage of some objects by other objects, the optimal implementation of a sliding window, the different aspect ratio of objects, and the presence of objects in different scales.

  – Supervisor: Dr. Nazerfard, Spring 2020

- **Persian Newsreader and Search Engine**

  – I implemented a newsreader and search engine as a web application in python. The program crawls websites and extracts their Persian news. After processing the data using some techniques such as stemming, lemmatization, clustering, and classification of news, a fast inverted index would be generated to handle the user's query.

  – Supervisor: Dr. Nikabadi, Fall 2019

- **Training RBF Network by Evolutionary Strategy**

  – I implemented and trained a neural network with the goal of regression, binary classification, and multi-class classification in Python. The network has a hidden layer with a variant number of perceptrons in which has a radial basis function as an activation function; the goal is to find the best number of bases, their radius, and weights in the network with the cooperation of evolutionary strategy.

  – Supervisor: Dr. Ebadzadeh, Spring 2019

- **Interactive Video Advertising using OpenCV**

  – I tried to implement an algorithm that performs like interactive video advertising. In order to achieve the goal, I used OpenCV library and some other image-processing techniques to add creative effects like snow, rain, animals shape into the frames by detecting mobile objects. The implemented algorithm applied to offline and online videos of a laptop camera.

  – Supervisor: Dr. Nikabadi, Fall 2018

- **Label Propagation Algorithm based on Local Cycles for Community Detection**

  – The LPA algorithm has been proven to be an extremely fast method for community detection in large complex networks. An important issue of the LPA algorithm has not yet been appropriately addressed that random update orders in label propagation process hamper the algorithm robustness; In order to rectify this problem, I implemented the LPA based on the local cycles.

  – Supervisor: Dr. Bagheri, Spring 2018

- **Text Generation With Alice in Wonderland**

  – I created a generative model for text, character-by-character using LSTM recurrent neural networks.

- **Sequence Classification of Movie Reviews**

  – I developed an LSTM based model for the IMDB problem. The problem was to determine whether a given moving review has a positive or negative sentiment based on the observed sequence of words.

- **Quora Insincere Questions Classification**

  – In this section, I tried to prepare a model based on naive bayes to predict whether a given question is sincere or not.

- **A Journey through Titanic**

  – The goal is to learn a model for predicting the survival or death of Titanic passengers from existing data.

- **Predict Sentiment From Movie Reviews**

  – In this project I discovered how we can predict the sentiment of movie reviews as either positive or negative in Python using the Keras deep learning library

- **Blockchain**

  – I tried to investigate the blockchain core and cryptocurrency application from scratch. The goal of this project was to design an application with the under-laying system like bitcoin.

- **A complete list of the projects is available in my Github account.**

Honors & Awards

2018	**Ranked in the top 15% among 100 undergraduate students in Computer Engineering and IT Department**, Amirkabir University of Technology, Tehran, Iran (over 134 credits)	*Tehran, Iran*
2017	**Ranked 4th among about 35 undergraduate students in Electrical Engineering Department (Control Engineering Major)**, Amirkabir University of Technology, Tehran, Iran (over 92 credits)	*Tehran, Iran*
2017	**IT Manager of Electrical Engineering Association Department**, Amirkabir University of Technology, Tehran, Iran	*Tehran, Iran*
2015	**Admitted to AUT**, Achieved **top 0.15 %** place among all applicants of the Nationwide University Entrance Exam for B.Sc. in Math. and Engineering (Approximately **250000 applicants**)	*Tehran, Iran*
2013	**2nd place in League Junior Soccer 'B' Light Weight**, RoboCup IranOpen 2013 Competitions	*Tehran, Iran*
2013	**1st place in League Junior Soccer 'B' Light Weight**, RoboCup Hellicup(related to NODET) 2013 Competitions	*Tehran, Iran*
2011	**Admission to NODET**, National Organization for Development of Exceptional Talents	*Tehran, Iran*
2010	**1st place in the National Conference on mathematics, analytic geometry and spatial orientation from Ministry of Science 2010**,	*Tehran, Iran*

Skills

Programming Languages	C++(Qt), Python, Java, C, Assembly Micro 8086 Matlab, Google Flutter
Web	PHP(Laravel Framework), Javascript, Django, HTML5 & XHTML, CSS3, PostgreSQL, jQuery, VueJs, Bootstrap
Frameworks and Toolkits	Keras, Tensorflow, OpenCV, Modelsim, Arduino, Git
Technologies	Blockchain and Cryptocurrency
Operating Systems	Windows, Linux (Ubuntu, Kali, Armbian, FriendlyARM)
Typesetting	Latex, Microsoft Office
Sports	Fitness, Swimming, Riding Bike
Hobies	Watching Movies, Financial Book Reading, Mountain Climbing

Test Scores

- TOEFL: 92 (R: 24, L: 24, S: 21, W: 23)
- GRE: V: 142, Q: 164, W: 3.0