S.Alireza Moazeni

COMPUTER SCIENCE

Simon Fraser Univresity, Burnaby, British Columbia, Canada

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Education

Simon Fraser University (SFU) *British Columbia , Canada*

COMPUTER SCIENCE *Sep. 2021 - Current*

Ph.D.

A Ph.D. student in Computer Science at Simon Fraser University.

Amirkabir University of Technology (AUT) *Tehran, Iran*

BACHELOR OF SCIENCE *Sep. 2015 - Sep. 2020*

Computer Engineering

- GPA
  - Total: **18.40 out of 20**
  - Cumulative GPA **(3.84/4.00)**
- Selected courses **(The complete list is available on my website.)**
  - 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
    - Reinforcement Learning Specialization, Master the Concepts of Reinforcement Learning Offered by University of Alberta

Electrical Engineering

I chose Electrical Engineering (The Department of Control) as my **minor focus** because of my interest in **Robotics, Electronics**, and **Control Concepts**.

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

- **Computer Vision**
- **Deep Learning**
- **Machine Learning**
- **Reinforcement Learning**
- **Artificial Intelligence**

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

- Laboratory Instructor of Basic Programming
  - Fall 2020
- 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)**
  - My B.S project's research is "Design and Implementation of Neural Style Transfer Web Application". The project's core is Transfer Learning and Optimization. This application gets two images from the user (content and style images) and outputs a painted image resulting from applying artwork style to the content image. My goals were improving the output's quality of the Neural Style Transfer Algorithm presented in the original paper and hyper tuning the parameters of the problem through different comparison options. Some notable works I have done were comparing the output quality of two different CNN architectures (VGG16 and VGG19), comparing reconstruction of the style and content from different blocks and points in the network, overcoming the problem of emerging high-frequency artifacts during the optimization section by introducing a new term to the loss function, comparing the effect of having a fixed or dynamic ration for the content to style weights during optimization, analyzing the effect of two different optimization algorithms (Adam and L-BFGS) and creation of output from the different start point in the optimization step.
  - Supervisor: Dr. Nazerfard

Academic Projects

Tehran, Iran

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

2020	**Offered for Direct Admission to graduate school (Ph.D.) in Computer Science**, Simon Fraser University, Vancouver, Canada	*Vancouver, Canada*
2020	**Offered for Direct Admission to graduate school (Master of Science) in Computer Engineering - Artificial Intelligence, without taking the Nationwide University Entrance Exam for M.Sc. as a reward of academic records and achievements.**, Amirkabir University of Technology, Tehran, Iran	*Tehran, Iran*
2020	**Ranked in the top 5% among 100 undergraduate students in Computer Engineering and IT Department**, Amirkabir University of Technology, Tehran, Iran	*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	PyTorch, 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: 98 (R: 28, L: 25, S: 21, W: 24)
- GRE: V: 142, Q: 164, W: 3.0