

# ALI MORTAZAVI | Curriculum Vitæ

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## EDUCATION

B.Sc. in Computer Software Engineering 2013 – 2017

**Amirkabir University of Technology (Tehran Polytechnic)**

[Top ranked university in Iran and 85th in the World in CS according to US News ranking]

CGPA: **Overall** 18.47 / 20 (3.78/4) [Ranked 3<sup>rd</sup>]

**Selected courses** 19.33 / 20 (4/4)

Diploma in Mathematics and Physics

2009 - 2013

**Nikan High school**

GPA: 19.16 / 20

## RESEARCH INTERESTS

In general, I am interested in applied mathematics, probability and statistics.

Now, with the growth of Deep Learning Systems, I am really interested in studying the properties of this networks and understanding what really Deep Neural Networks learn! With these number of parameters in a deep network, does it actually learn or memorize? How can we make them robust to the adversarial noises to learn and percept like a human?

I am also interested in how we can add some mechanism that guaranty that computers will be safe for human species.

My research interests are:

- Statistical Machine Learning
- Deep Neural Networks Robustness
- Optimization
- Mechanism Design in Game Theory
- Encoding sequential information in Natural Language Processing

## RESEARCH EXPERIENCES

June 2017 – August 2017

### **Implementation and Evaluation of “Genetic” and “Simulated Annealing” Algorithms for Extended Travelling Salesman Problem [github]**

(B.SC. Project)

Under the supervision of **Dr. Razazi** at Amirkabir University of Technology

In this project, we tested the performance of two different heuristic approaches to solve an NP-Complete Problem. This problem is an extended version of the Travelling Salesman Problem. Since our approach is heuristic, there is no guaranty to find a global optimum answer. So we needed some other exact approach for computing the global optimum. For this purpose, we reduced our problem to an Integer Linear Programming Instance. So in small graph samples, we could compare our results with the optimum solution and for the large graph samples, we just compared our two different methods with each other.

## TEACHING EXPERIENCES

Teaching Assistant, **Probability and Statistics for Engineering**

Winter-Spring 2018

[Dr. Haeri](#)

CEIT dep., Amirkabir University of Technology

Teaching Assistant, **Design of Algorithms Course**

Winter-Spring 2017

[Dr. Rahmati](#)

CS dep., Amirkabir University of Technology

Teacher, **Class for Olympiad Preparation**

Winter-Spring 2017 and 2018

Intro. To Theory of Computation, Algorithm Design

CEIT dep., Amirkabir University of Technology

Teaching Assistant, **Design of Algorithms Course**

Winter-Spring 2016

[Dr. Mousavi](#)

CEIT dep., Amirkabir University of Technology

## HONORS AND AWARDS

**Ranked 3rd in term of CGP among student of computer engineering of 2013 Entrance**

2017

At Department of Computer Engineering and Information Technology of AmirKabir University

**Ranked 19<sup>th</sup> in the National Scientific Olympiad of Computer Engineering**

2016

<http://olympiad.sanjesh.org/Fa/ResultDetail.aspx?CID=109&BID=10>

<b>Qualified in the Selection Exam of National Scientific Olympiad of Computer Engineering</b> Qualified as 9 <sup>th</sup> among the students in all the Universities in the Tehran Region <a href="http://olympiad.sanjesh.org/Fa/ResultDetail.aspx?CID=99&amp;BID=10">http://olympiad.sanjesh.org/Fa/ResultDetail.aspx?CID=99&amp;BID=10</a>	2016
<b>Best Score in Mathematics Team Selection Exam</b> <a href="https://alimorty.github.io/awards/2015-spring-award-2">https://alimorty.github.io/awards/2015-spring-award-2</a>	2015
<b>Ranked Top 0.5% In The Country-wide University Entrance Exam</b> In more than 250'000 participants	2013
<b>Won acceptance in the first stage of the nationwide competition on to select Mathematics Olympiad team</b>	2011

## TALKS

May 2018

### **A brief summary to The Theory of Computation**

A presentation (in Persian) for *Students in Introduction to The Theory of Computation* course. I explained why we see problems as a language and why it is important to categorize them by different sets.

CEIT dep., Amirkabir University of Technology.

May 2017

### **What is Natural Language Processing**

A presentation (in Persian) for *Data Mining* course about the general concept of NLP and approaches towards natural language understanding in AI.

CEIT dep., Amirkabir University of Technology.

June 2016

### **Can computers have feelings?**

A presentation (in Persian) for *Research Method and Technical Report Writings* course based on Alan Turing's famous paper "Computing machinery and intelligence".

CEIT dep., Amirkabir University of Technology.

## TOP ACADEMIC COURSE PROJECTS

### **Image Denoising and Segmentation Using Markov Random Field [github]**

Optimizing Energy Function using Simulated Annealing, Comparing different Color Spaces results

### **Text Summarization [github]**

Extract important sentence as a summary using page rank algorithm and word2vec.

### **Text Classification [github]**

Using different metrics (mutual information, information gain, etc.) for extracting important words for document classification task

### **Grade prediction**

Regression, Normalization, Visualization. using Python, *Foundations of Data Mining*

### **Design and implementation of a smart Pacman agent**

Local search algorithms, Optimization algorithms like GA using Python, *Artificial Intelligence*

### **Implementation of a 2d strategic game with multi-player support**

Multi-threading using Java, *Advanced Computer Programming*

## **ATTENDED SEMINARS AND CONFERENCES**

### **Deep Learning Summer School at University of Tehran**

August 2018

An introduction to Deep Learning and different research Areas.

<http://acm.ut.ac.ir/deeplearning/>

### **Block Chain and Cryptocurrency**

February 2018

An introduction to Block Chain Mechanism and different Cryptocurrency systems. By [Dr. Hatami](#) and [Dr. Salavati](#)

### **Workshop on Game Theory**

February 2017

An introduction by [Dr. Salavati](#) to Game Theory Concepts (Nash Equilibrium, Expected Pay off, Repeated Games, Auctions, etc.)

## **SKILLS**

### **Theoretical Skills:**

Mathematics, Probability and Statistics, Algorithms

### **Technical Skills:**

Python (NumPy, Scikit, Pandas, NLTK), Java, C/C++

## **LANGUAGES**

**Persian (Farsi):** Native

**English:** Intermediate Level

## **OTHER INTERESTS AND ACTIVITIES**

### **Piano**

Jun 2018

Recently I've started to learn piano. (My first [play](#))

### **AmirKabir Programming League Staff**

April 2016

I was member of problem setting team.

### **Basketball**

June 2015

Member of Basketball team in Computer Engineering Department.