# Ali Omrani

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## EDUCATION

University of Tehran — B.Sc. — Computer Engineering - Software [2014 - Present]

- Cumulative GPA 3.87/4 (18.38/20) — ranked 2nd in the CE track
- Last 2 years' GPA 4/4 (19.43/20)

Allameh Helli High School — Diploma — Math and Physics Discipline [2010 - 2014]

- GPA 4/4 (19.92/20)
- Affiliated with NODET (National Organization for Development of Exceptional Talents)

## HONORS & AWARDS

- Ranked 2nd in Cumulative GPA among near 100 students in Computer Engineering Class of 2018 [2018]
- DAAD scholarship for Summer internship under IAESTE program [2017]
- Won F.O.E. (Faculty of Engineering) Award [2016]
- Ranked 115th among near 300000 Students in university entrance exam [2014]
- 3rd Place in RoboCup Iran Open 2012 junior soccer league [2012]
- Accepted as an exceptional talent in NODET [2007]

## RESEARCH & VOLUNTEER WORK

Technical Committee, RoboCup Asia-Pacific (RCAP) 2018 [Aug 2018-Present]

Research Assistant, Cognitive Systems Lab, University of Tehran [Aug 2018-Present]

- Working on attention mechanism
- More specifically on how attention can be used to incorporate side information to both accelerate learning and improve generalization
- Under supervision of Dr. Majid Nili Ahmadabadi
- Got familiar with reinforcement learning and concepts of cognitive science

Technical Committee, RoboCup Iran Open Competitions [Jan 2016-Present]

Intern, Fraunhofer IDMT, Ilmenau, Germany [Summer 2017]

- Built a singing voice detection system using deep convolutional neural networks
- Achieved comparable accuracy using 1000 times less data than the reference paper by Jan Schlüter
- Worked with Keras, Theano, Tensorflow, and Pytorch.
- Under supervision of Dr.-Ing. Estefanía Cano Cerón and Stylianos Ioannis Mimilakis
- Got familiar with deep learning, convolutional neural networks, recurrent neural networks and music information retrieval techniques through the following courses
  - Convolutional Neural Networks for Visual Recognition course from Stanford

- Neural Networks for Machine Learning course from Geoffrey Hinton on Coursera [partially]

Research on CDR of Iran's mobile operators, University of Tehran [Summer 2016]

- Built graphs from CDR data and analyzed several graph characteristics
- Found out about anomalies and the reasons behind them including the following
  - Spammers in the network trying to do mass advertising through text messages
  - Peak of the network usage just before certain holidays due to of the large volume of greetings
  - Irregularities in the pattern of text message traffic due to a popular TV show that had a soccer result prediction competition through text messages
- worked under the supervision of Dr. Behnam Bahrak
- Got familiar with D3 / neo4j graph database / R / Python through the following course
  - Graph Analytics for Big Data on Coursera from University of California San Diego

## TEACHING ASSISTANTSHIP

| | | |
|---|---|---|
| Introduction to software testing [**Chief TA**] | Dr. Khamespanah | [Fall 2018] |
| Introduction to Network Security | Dr. Sayad Haghighi | [Fall 2018] |
| Operating Systems | Dr. Kargahi | [Fall 2018] |
| Databases | Dr. Shakery | [Fall 2018] |
| Artificial Intelligence [**Chief TA**] | Dr. Moradi | [Spring 2018] |
| Introduction to Network Security | Dr. Sayad Haghighi | [Spring 2018] |
| Operating Systems | Dr. Kargahi | [Spring 2018] |
| Databases | Dr. Shakery | [Spring 2018] |
| Operating Systems | Dr. Kargahi | [Fall 2017] |
| Databases | Dr. Shakery | [Fall 2017] |
| Theory of Formal languages and Automata | Dr. Fadaei | [Spring 2017] |
| Engineering Probability and Statistics | Dr. Bahrak | [Fall 2016] |
| Introduction to Computing Systems and Programming | Dr. Moradi<br>Dr. Hashemi | [Fall 2015] |

## SKILLS

- **PROGRAMMING**

  Python / C / C++ / Java/ Matlab | TensorFlow / Theano / Keras | Verilog / VHDL / BashScript / R | JavaScript/ Node.js / React / HTML / CSS | TeX / LaTeX | Cypher / SQL

- **PROGRAMS**

  R studio | Selenium / Grinder | Kali / OpenSSL / BeEF | Antlr | Quartus / Multisim | Modelsim / CodeVision / QtSpim / Xilinx ISE | VIM / IntelliJ / PyCharm | VirtualBox / Vmware / Mininet

- **LANGUAGES**

| | |
|---|---|
| Persian | Native |
| English | TOEFL **118/120** , R:30-L:30-S:30-W:28)<br>GRE V:**151** (**52nd** percentile), Q:**167** (**91st** percentile), AW:**4.5** (**82nd** percentile) |

## SELECTED COURSE PROJECTS

Singing Voice Detection from Weak Labels | Internship at Fraunhofer IDMT

- Implementation of Jan Schlüter's paper Using Keras and TensorFelow as backend

Substitution Cypher Solver System| Artificial Intelligence

- Implemented in Python using Genetic Algorithm to find encryption key from letter frequencies

Sudoko Solver | Artificial Intelligence

- Implemented in Python using informed and uninformed search methods

MLP Hardware Description for digit detection on MNIST dataset| CAD

- Designed and Implemented using VHDL on FPGA

Browser Exploitation| Network Security

- Using Kali, Windows7, VirtualBox, and BeEF on Internet Explorer

Phishing Attack on UT's Central Authentication System (CAS) | Network Security

- Using Kali, HTTrack, The Social Engineering Toolkit (SET), and PHP

Asghar Torrent (Similar network to the BitTorrent)|Computer Networks

- Implemented Using Python, Deployed and tested on mininet

SDN (Learning Switch) Implementation|Computer Networks

- Implemented With the ability to find spanning tree Using Floodlight OpenFlow Controller and Java

DNS Hierarchy Simulation, TCP Implementation|Computer Networks

- Implemented Using Java and Deployed on mininet

Multi-client Snake Game|Computer Networks

- Implemented Using Python, PyGame and deployed on mininet

Atalk an actor-based programming language | Compiler Design and Implementation

- Designed and Implemented using Antlr, Java and Tested on MIPS simulator QtSpim

CFS Scheduler, Semaphore with PIP and avoidance of starvation | OS Laboratory

- implemented in the linux 2.6 kernel using C programming language

Chat system with file sharing , Multithread Matrix Multiplication | Operating System

- implemented using C language , Sockets ,and Pthread Library

Pipelined MIPS Processor | Computer Architecture

- Capable of Hazard Detection and Data Forwarding implemented in Verilog

Watermarking | Signal and Systems

- implemented using Matlab as our final project

Linkedoon (Program similar to linkedin)| Advance Programming

- implemented using C++ and QT

Prediction & Analysis on price of gold vs dollar vs oil | Probability and Statistics

- implemented using Matlab

Oscilloscope implementation on FPGA | Digital Logic Design Laboratory

- implemented using Verilog and was tested on FPGA board References

- **Dr. Behnam Bahrak**
  Assistant Professor, ECE, University of Tehran
  Software Engineering Group
  Phone: +98 (21)82084305
  Email: bahrak@ut.ac.ir

- **Dr.-Ing. Estefanía Cano Cerón**
  Post-doctoral researcher, Fraunhofer IDMT
  Semantic Music Technologies Research Group
  Phone: +49 3677 467-110
  Email: estefania.cano.ceron@idmt.fraunhofer.de

- **Dr. Mahdi Kargahi**
  Associate Professor, ECE, University of Tehran
  Software and Computer Architecture Group
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  Email: kargahi@ut.ac.ir