Reza Tavasoli

Contact Information

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Research Interests

- Deep Learning
- Computer Vision
- Machine Learning
- Artificial Intelligence in Medicine
- Internet of Things (IoT)

Education

- **Amirkabir University of Technology (Tehran Polytechnic)**, Tehran, Iran
  (Ranked 2nd among all Iranian universities based on QS World University Rankings)
  (Ranked 174th in computer science among global universities based on U.S. News)

  B.Sc., Computer Engineering, September 2016 - Present
  Last Two Years GPA: **17.39**/20 (**3.73**/4)
  Overall GPA: **16.5**/20 (**3.4**/4)

- **Danesh High School**, Tehran, Iran

  Diploma in Mathematics and Physics 2012 - 2016
  Overall GPA: **19.68**/20

Relevant Coursework

- **Artificial Intelligence** (19.32/20)
- **Algorithm Design** (19.25/20)
- **Engineering Statistics** (18.05/20)
- **Database Design** (18.1/20)
- **Computer Networks** (19.6/20)
- **Information Security** (18.9/20)
- **Software Engineering** (18/20)
- **Operating Systems** (18.3/20)

Teaching Experience

Amirkabir University of Technology, Tehran, Iran
Teaching Assistant

- Principles of Artificial Intelligence, Instructor: Fatemeh Mousavi (Fall 2020, Spring 2020)
- Algorithm Design, Instructors: Prof. Alireza Bagheri, Mahdi Javanmardi (Fall 2020)
- Database Design, Instructor: Prof. Saeede Momtazi (Fall 2020)
- Internet of Things, Instructor: Prof. Mehdi Rasti (Fall 2020)
- Microprocessors and Assembly Language, Instructor: Prof. Hamed Farbeh (Fall 2020, Spring 2020, Fall 2019)
- Computer Architecture, Instructor: Prof. Hamed Farbeh (Spring 2020, Fall 2019)
- Information Security, Instructor: Prof. Nastooh Taheri Javan (Spring 2020)
- Computer Networks, Instructor: Prof. Masoud Sabaei (Spring 2020)

Research Experience

Research Assisstant, Amirkabir University of Technology (April 2020 - Present)
Building a web application and mobile application to detect dental cysts from dental radiography images. Involves collecting dental images dataset and labeling them and constructing a neural network with transfer learning to classify infected images.
Supervisor: Prof. Hamed Farbeh

Work Experience

- **Freelance Mobile Developer** (2019 - Present)
  Building native iOS apps with Swift and hybrid apps with Flutter
- **Database Developer Intern** (June - August 2019)
  Worked as a SQL Server Backend Developer

Honors And Rewards

- Featured mobile application built with Flutter Framework that was showcased on Flutter Weekly, 2020.
- Achieved top **0.4%** place among all applicants of the Nationwide University Entrance Exam for B.Sc. in Engineering (Approximately 160000 applicants), Iran, 2016.
- Achieved top **0.5%** place among all applicants of the Nationwide University Entrance Exam for B.Sc. in English (Approximately 115000 applicants), Iran, 2016.
- Ranked **1st** among 200 students in Danesh High School, Iran, 2015.

Skills

- **Programming Languages:**
  Python, Dart, Java, Swift, C++
- **Database Systems:**
  PostgreSQL, SQL Server, MySQL
- **Mobile App Development:**
  Flutter, iOS
- **Web Development:**
  HTML, CSS, Bootstrap, Django
- **Miscellaneous:**
  OpenCV, Bash Script, Git, LaTeX
- **AI and Data Science:**
  Tensorflow, Numpy, Matplotlib, Pandas
- **Operating Systems:**
  macOS, Linux, Windows

Professional Development

- **Deep Learning Specialization - Coursera**
  Learned the foundations of Deep Learning, how to build neural networks, and understanding Convolutional networks, RNNs, LSTM, Adam, Dropout, BatchNorm. (Link to certificate)
- **DeepLearning.AI TensorFlow Developer - Coursera**
  Learned the tools to build scalable AI-powered applications with TensorFlow. (Link to certificate)
- **Machine Learning - Coursera**
  Learned the fundamentals of Machine Learning, Data Mining, and Statistical Pattern Recognition. (Link to certificate)

Selected Projects

- **Malaria Detection from Blood Cell Images**
  Implemented a convolutional neural network to detect Malaria from thin blood slide images, based on the dataset provided by The United States National Library of Medicine.
  Github Link: github.com/tavasolireza/CNN-Malaria-Detection
- **Landscape Images Colorization**
  Implemented a deep convolutional neural network to colorize black-and-white landscape images.
  Github Link: github.com/tavasolireza/Landscape-Images-Colorization
- **Deep Sudoku Solver**
  Implemented with OpenCV and Tensorflow, identifies a sudoku puzzle from the the provided image and solves it.
  Github Link: github.com/tavasolireza/Deep-Sudoku-Solver
- **Real-Time Face Anonymizer**
  Implemented with OpenCV and pretrained Face Detection Model, anonymizes faces (blur or pixelate) from the still images or the webcam camera.
  Github Link: github.com/tavasolireza/Real-Time-Face-Anonymization
- **Travelling Salesman Problem**
  Implemented two approaches (nearest-neighbor heuristic and exhaustive search) to solve TSP and measure their run times on a few different inputs.
  Implemented for the Algorithm Design course.
  Github Link: github.com/tavasolireza/Travelling-Salesman-Problem
- **Graph Node Coloring with Local Search Algorithms**
  Assigning a color to each node (nodes are cities on a map), while each neighboring nodes have distinct colors, using Simulated Annealing and Genetic algorithms. Implemented for the Artificial Intelligence course.
  Github Link: github.com/tavasolireza/Map-Coloring-AI-Project
- **NUMEX Interpreter**
  A NUMEX (Number-Expression Programming Language) interpreter in Racket Language. Implemented for the Programming Languages course.
  Github Link: github.com/tavasolireza/NUMEX-Interpreter
- **Compiler in Python**
  Built a Lexical Analyzer and a Bottom-Up LALR parser using Python's PLY library. Implemented for the Compiler Design course.
  Github Link: github.com/tavasolireza/Compiler-Design
- **Secure Chat Application**
  Built a secure client-server chat application with public key and private key encryption. Checks messages integrity and confidentiality with MAC and digital signature. Implemented for the Information Security course.

Presentation

- Voice Recognition in Virtual Voice Assistants
- Bash Script 101
- A Brief Introduction to LaTeX
- Business Model Canvas for an Online Gift Shop

Technical Reports

- **Persian Text Classification** - project report for Artificial Intelligence course (in Persian), AUT, Tehran, Iran 2019
- **Simulating Classical Search Algorithms to Solve Rubik Cube** - project report for Artificial Intelligence course (In Persian), AUT, Tehran, Iran, 2019
- **Configuring DHCP, RIP, NAT and DNS in GNS3** - project report for Computer Networks course (In Persian), AUT, Tehran, Iran, 2019
- **Travelling Salesman Problem Time Complexity and Space Complexity** - project report for Algorithm Design course (In Persian), AUT, Tehran, Iran, 2018
- **Detecting Spam Emails** - project report for Engineering Statistics course (In Persian), AUT, Tehran, Iran, 2018

Languages

- **Persian** (Farsi): Native
- **English**: Fluent - **TOEFL iBT**: 113/120 (Reading: 28, Listening: 28, Speaking: 29, Writing: 28)

References

- **Hamed Farbeh, Assistant Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: farbeh@aut.ac.ir
- **Saeede Momtazi, Assistant Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: momtazi@aut.ac.ir
- **Fatemeh Mousavi, Instructor**
  Computer Engineering and IT Department, Amirkabir University of Technology
  Email: sf.mousavi@aut.ac.ir
- **Alireza Bagheri, Associate Professor**
  Computer Engineering and IT Department, Amirkabir University of Technology
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- **Mehdi Rasti, Assistant Professor**
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- **Nastooh Taheri Javan, Research Professor**
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