

Borna Tavasoli

School of Electrical and Computer Engineering – University of Tehran

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Education

College of Electric and Computer Engineering, University of Tehran

18.75/20

Bachelor of Science - Computer Engineering

09/2019 - Present

▷ 1st rank, spring 2021 semester ◊ 19.59/20

▷ 3rd rank, 2020-21 academic year ◊ 19.38/20

▷ Faculty average GPA is 15.10/20

Atomic Energy High School

19.65/20

High School Diploma - Mathematics & Physics

09/2016 - 05/2019

Research Experience

Research Assistant

Shanghai University of Finance and Economics, China

Summer Internship

07/2023 - Present

My research involves solving the detour problem in different settings. More specifically, solving the problem for noisy planar graphs. My internship supervisor is Dr. Bundit Laekhanukit.

Research Assistant

Max-Planck-Institut für Informatik, Germany

Spring Internship

03/2023 - Present

I am currently conducting research about dynamic algorithms under the supervision of Dr. Adam Polak.

Research Assistant

The University of Hong Kong, Hong Kong

Summer Internship

07/2022 - 12/2022

I worked with Dr. Zhiyi Huang on online algorithms. More precisely, our research involved an extension of the prophet inequality problem. Part of this project was done when I was doing an internship at HKU CS Research Internship Programme.

Research Assistant

Clermont-Ferrand, France

Remote collaboration

09/2021 - 01/2022

I worked as a research assistant for Dr. Florent Foucaud. My main work was done on the metric dimension problem in different graph classes.

Publications

Discrete Mathematics Book

07/2021 - 10/2022

I wrote the *Mathematical Induction* chapter in a thorough open source [book](#) about discrete mathematics under the supervision of S. Mohammadi. I am also a member of the reviewing team.

Projects

Artificial Intelligence Course Project

Python

- **Search Project:** Used BFS, IDS, and different versions of A* algorithms to solve a specific search problem.
- **HandsOn Project:** Used minimax and genetics algorithm for two separate projects.
- **NaïveBayes Project:** Wrote naïve bayes classifier that helps group different advertisements into their right categories.
- **MachineLearning Project:** Used Sickit-Learn library to predict labels and optimize them based on Decision Tree and Random Forest models.
- **NeuralNetwork Project:** Implemented a Feed Forward Neural Network from scratch in the first phase. In the second phase, I used TensorFlow library and Keras high-level interface to train a neural network that classifies different types of animals.

Operating Systems Course Project

C, C++

- **SocketProgramming Project:** A client-server based chat room where clients broadcast their answers using UDP sockets and communicate with the server with a TCP socket.
- **ProcessHandling Project:** A simplified map-reduce structure that divides and assigns a specific task to different processes, while using named/unnamed pipes for inter-process communication.
- **MultiThreadedProgramming Project:** A multi-threaded program that applies different color filters to a single image.

Advanced Programming Course Project

C++, HTML, CSS

- **Game Project:** An event-driven, graphical implementation of Fieldrunners using the RSDL library.
- **Final Project:** An online hotel reservation website operating with APHTTP (A simple web-app framework) with emphasis on OO Design. Implemented in three phases.

Computer Architecture Course Project

Verilog

Implemented the MIPS processor with three different methods: Single-Cycle MIPS Processor, Pipelined MIPS Processor, Stack-Based MIPS Processor

Honors & Awards

HKU CS Research Internship Programme Certificate

2022

I was fortunate enough to receive a certificate for my work as an intern at HKU CS Research Internship Programme; This certificate was only given to the students who had a satisfactory presentation at the end of the internship.

Iran's National University Entrance Exam

07/2019

Participated in three different categories and secured the following results

- Ranked 121st in Mathematical Sciences (out of 164,278 entrants).
- Ranked 38th in Foreign Languages (out of 165,533 entrants).
- Ranked 206th in Arts (out of 103,665 entrants).

Book Editor

2018 - 2020

Edited and proofread many best seller books in different subjects such as English, Chemistry and Algebra which helped students prepare for Iran's National University Entrance Exam.

World Mathematics Team Championship

2016

Won Gold medal in the national selection exam.

World Mathematics Invitational

2015

Won Gold medal in the national selection exam.

Technical Strengths

- **Programming Languages**
 - ▷ **Expert** C++ · C
 - ▷ **Proficient** Python · Verilog · SystemVerilog
 - ▷ **Familiar** Java · JavaScript · Type-Script · R · Bash · Assembly · CSS · HTML · SQL
- **Development** Git · MongoDB · Elasticsearch · Kibana · Postman
- **Others** ModelSim · Quartus · Multisim · RStudio · Matlab · Raspberry Pi · Ubuntu · L^AT_EX

Positions of Responsibility

Chief TA

University of Tehran

Algorithm Design, M. J. Dousti

09/2022 - Present

The Chief TA is in charge of all matters related to the course. Under the supervision of Dr. Dousti, I help design course material, organize the teaching staff, manage students' activities, hold TA sessions, etc.

Supervisor TA

University of Tehran

Discrete Mathematics, S. Mohammadi

09/2022 - Present

As a course supervisor, I mentor new teaching assistants and oversee course assignments.

Teaching Assistant <i>Advanced Algorithm (Graduate Level), H. Faili</i> I help with designing homework, quizzes, and TA classes. I also grade student projects and exams.	University of Tehran 09/2022 - Present
Event Director <i>Extracurricular Activities</i> I joined our student chapter as an event director and helped manage different events for the students. Some of the bigger events I directed had a staff of up to 50 people.	University of Tehran, ACM Student Chapter 11/2021 - Present
Teaching Assistant <i>Discrete Mathematics, S. Mohammadi</i> I have been helping with the course outline, problem setting (for both class quizzes and homework), and grading student assignments.	University of Tehran 09/2020 - 09/2022
Teaching Assistant <i>Algorithm Design, M. J. Dousti</i> I have been helping with both designing and grading aspects of the course's weekly assignments.	University of Tehran 09/2021 - 09/2022
Teaching Assistant <i>Computer Aided Digital System Design, M. E. Salehi, M. Modarressi</i> I designed and graded a computer assignment about the SHA3 hash algorithm.	University of Tehran 01/2022 - Present
Teaching Assistant <i>Introduction to Programming and Computing Systems, M. R. Hashemi, H. Moradi</i> I graded some of the projects and weekly homework.	University of Tehran 09/2020 - 01/2021
Course Mentor <i>Algorithms</i> I helped organize the Algorithms Course in ACM's Summer of Code. In this course, participants will get familiar with some of the more practical algorithms and use them in various projects to strengthen their creative thinking skills.	University of Tehran, ACM Student Chapter Summer 2021
Course Mentor <i>Multimedia</i> I helped organize the Multimedia Course in ACM's Summer of Code. In this course, participants will learn to work with different editing tools and will build their own projects at the end.	University of Tehran, ACM Student Chapter Summer 2021

Work Experience

Back-end Data Engineer <i>Karafs Team, A startup company with over 4 million users</i> I was working and researching in the back-end chapter of the company.	Tehran, Iran 05/2021 - 08/2021
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Related Courses

- o Discrete Mathematics (20/20)
- o Data Structures and Algorithms (20/20)
- o Design and Analysis of Algorithms (20/20)
- o Advanced Algorithms (20/20)
- o Strategic Games (16.7/20)
- o Introduction to Computing Systems and Programming (20/20)
- o Formal Languages and Automata Theory (19/20)
- o Advanced Programming (20/20)
- o Artificial Intelligence (18.5/20)

Last updated on 04/10/2023