

# Ghazal Kalhor

COMPUTER ENGINEERING · STUDENT

School of Electrical and Computer Engineering, University College of Engineering, University of Tehran, North Kargar st., Tehran, Iran.

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## Education

### B.Sc. in Computer Engineering

Tehran, Iran

COLLEGE OF ELECTRIC AND COMPUTER ENGINEERING, UNIVERSITY OF TEHRAN

Sep. 2017 - Present

- GPA of Last Two Years: 19.71/20 (Cum. GPA: 19.32/20)
- Related Courses: Algorithmic Graph Theory(20/20), Artificial Intelligence(20/20), Engineering Probability and Statistics(20/20), Algorithm Design(20/20), Machines and Language Theory(20/20), Discrete Mathematics(20/20), Database Design(19.8/20), Advanced Programming(19.25/20)

### Minor in Mechanical Engineering

Tehran, Iran

COLLEGE OF MECHANICAL ENGINEERING, UNIVERSITY OF TEHRAN

Sep. 2017 - Sep. 2018

- GPA: 19.18/20

### High School Diploma in Mathematics and Physics

Tehran, Iran

FARZANEGAN HIGH SCHOOL

Sep. 2013 - Jun. 2017

- GPA: 19.98/20

## Honors & Awards

2021	<b>Ranked 3<sup>rd</sup></b> among 106 Computer Engineering B.Sc. students, University of Tehran	Tehran, Iran
2019, 2020	<b>Supporter Foundation of University of Tehran (SFUT) Honorable Student Award</b> which is given to the top-ranking students with high GPA, University of Tehran	Tehran, Iran
2017	<b>Ranked in the Top 0.2% (99.8 percentile)</b> in <a href="#">Iranian University Entrance Exam</a> among more than 148,000 participants(B.Sc)	Tehran, Iran
2016	<b>Finalist</b> in 14 <sup>th</sup> Iranian Laboratory Olympiad in Chemistry among students of top high schools of Iran	Qazvin, Iran
2015, 2016	<b>Ranked in the Top 2%</b> in Iranian Olympiad in Chemistry among more than 30,000 talented Iranian students in the first round	Tehran, Iran
2014	<b>Ranked 2<sup>nd</sup></b> in the provincial stage of <a href="#">Khwarizmi Youth Festival</a>	Tehran, Iran

## Research Interests

- Social Network Analysis
- Statistical Inference
- Recommender Systems
- Graph Analytics
- Computational Social Science
- Machine Learning

## Research Experience

### Undergraduate Research Assistant

University of Tehran

UNDER SUPERVISION OF [PROF. BEHNAM BAHRAK](#)

Aug. 2020 - Present

I implemented three popular recommendation algorithms, including item-based collaborative filtering, user-based collaborative filtering, and probabilistic matrix factorization for the recommender system of Goodreads Datasets. My notebooks can be found [here](#).

### Data Science Intern at PAD Laboratory

Science and Technology Park,

University of Tehran

UNDER SUPERVISION OF [PROF. BEHNAM BAHRAK](#)

Jul. 2021 - Sep. 2021

I conducted various graph-based analyses on social networks and bibliographic platforms such as Google Scholar to get some insight into the behavior of users.

## Teaching Experience

### Head Teaching Assistant

University of Tehran

FORMAL LANGUAGES AND AUTOMATA THEORY, [PROF. HOSSEIN HOJJAT](#)

Dec. 2020 - Present

### Supervising Teaching Assistant

University of Tehran

ADVANCED PROGRAMMING, [PROF. RAMTIN KHOSRAVI](#)

Aug. 2021 - Present

### Teaching Assistant

University of Tehran

DATABASE DESIGN, [PROF. AZADEH SHAKERY](#)

Dec. 2020 - Present

## Teaching Assistant

DISCRETE MATHEMATICS, [PROF. SIAMAK MOHAMMADI](#)

University of Tehran

Dec. 2018 - Dec. 2020

## Teaching Assistant

FORMAL LANGUAGES AND AUTOMATA THEORY, [PROF. HOSSEIN HOJJAT](#)

University of Tehran

Dec. 2019 - Dec. 2020

## Teaching Assistant

ADVANCED PROGRAMMING, [PROF. RAMTIN KHOSRAVI](#)

University of Tehran

Sep. 2019 - Aug. 2021

## Professional Development

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### Recommender Systems, Prof. Joseph A. Konstan

University of Minnesota, Coursera

In this Specialization, I learned about fundamental techniques in recommender systems, including content-based, collaborative filtering, matrix factorization, and hybrid machine learning methods, through four courses. Official certificates that I earned for these courses can be found [here](#).

### Statistical Inference, Prof. Behnam Bahrak

University of Tehran

I took this course from the University of Tehran master's program. In this course, I learned to use statistical software (R) for data analysis, apply estimation and testing methods, make data-based decisions, model relationships between variables, and interpret results. **(Final Grade: 20/20)**

## Notable Academic Projects

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### HealthCare Dataset Analysis

Statistical Inference

Conducted various statistical analyses on a HealthCare dataset and designed a model to predict health bills for individuals. (Written in R)

### House Price Prediction

Artificial Intelligence

Applied advanced regression techniques like KNN, random forest, and decision tree to predict house prices for the Kaggle [dataset](#). (Written in Python)

### Sentiment Analysis of Digikala

Artificial Intelligence

Normalized comments, extracted features and implemented a sentiment analyzer using a Naive Bayesian classifier. (Written in Python)

### Feedforward Neural Network

Artificial Intelligence

Implemented a feedforward neural network from scratch and learned its hyperparameters to achieve the highest accuracy in the classification of the Fashion-MNIST dataset. (Written in Python)

### Predicting COVID 19

Artificial Intelligence

Implemented an optimal neural network to classify the photos of the humans' lungs into Covid19, Normal, and Pneumonia classes. (Written in Python)

### Freelancers Collective Database

Database Design

Implemented a database with functions, triggers, views, and indexes for a freelancers' collective. (Written in PostgreSQL)

### Multicast Protocol

Computer Networks

Implemented the Distance Vector routing protocol, which uses the Bellman-Ford algorithm for routing and forwarding messages and files among virtual nodes. Also, implemented the BGMP protocol to handle multicasting. (Written in C++)

### FTP Server

Computer Networks

Implemented an FTP server on a client-server model architecture using separate control and data connections between the clients and the server. (Written in C++)

### Course Enrolment Application (Bolbolestan)

Internet Engineering

Developed a web application for online course registration and searching. (Backend: Java(Spring framework) - Frontend: JavaScript(Reactjs) - DB: MySQL - Deployment: Docker, Kubernetes)

### Circuit-Solver

Electrical Circuits

Implemented software for visualizing and solving electrical circuits. (Written in Python)

### Smart Brace

Minor Program

Designed a smart brace for scoliotic patients by employing piezoelectric sensors. Also, I developed a website for this product.

## Technical Skills

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<b>Programming Languages</b>	R, Python, C, C++, JAVA
<b>Databases</b>	MySQL, SQLServer, PostgreSQL, MongoDB, Redis, Elasticsearch, Cassandra, Neo4J
<b>R &amp; Python Libraries</b>	SNAP, NetworkX, igraph, ggplot2, ergm, NLTK, NumPy, pandas, scikit-learn, Keras
<b>Web Development</b>	React, JavaScript, CSS, HTML5, TypeScript, Bootstrap, JSP, Spring
<b>Hardware Design Languages</b>	Verilog, SystemVerilog
<b>Simulation</b>	ModelSim, Quartus, Proteus, NS2
<b>Tools</b>	Git, Gephi, $\text{\LaTeX}$ , RStudio, Jupyter notebook, Maven, Postman, Docker, Kubernetes, WordPress
<b>Operating Systems</b>	Linux(Ubuntu), macOS, Windows

## Volunteering Experience

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### Member of **UT AP** Team

DESIGNED PROGRAMMING PROJECTS FOR ADVANCED PROGRAMMING COURSE.

*University of Tehran*

*Sep. 2019 - Present*

### Member of DMC Team

DESIGNED QUESTIONS FOR THE DISCRETE MATHEMATICS CONTEST AND ORGANIZED THE CONTEST.

*University of Tehran*

*Apr. 2019 - Jun. 2019*

## Workshops

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### Teaching Assistance Training Introduction to AVR

A three-hour workshop held by the School of ECE, University of Tehran

*Fall 2019*

Directed by Kowsar Educational and Research Center, University of Tehran

*Summer 2018*

## Languages

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**Persian** Native

**English** Professional working proficiency

## Interests

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Playing chess, Teamworking, Leadership, Voluntary work, Reading books ([here](#) is the list of my readings)