

Kasra Kashani

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Education

University of Tehran , BS in Computer Engineering	Sept 2022 – Now
• GPA: 18.77/20 (3.75/4)	
Salam Tajrish Highschool , Diploma in Mathematics and Physics	Sept 2019 – Sept 2022
• GPA: 19.61/20 (3.92/4)	

Research Interests

Artificial Intelligence
NLP

Machine Learning
Data Science

Automata and Language Theory
Compiler Designing

Honors and Awards

- **TOP 10% among 110 Computer Engineering B.Sc. students**
Member of Elite Students, University of Tehran
- **TOP 100 among 145,000 participants in the National University Entrance Exam**
Known as Konkur of Mathematics and Physics, Sanjesh Org

Relevant Courses

Data Science , Instructor: Dr. Bahrak & Dr. Yaghoobzadeh	In Progress
Compiler Designing and Programming Languages , Instructor: Dr. Tavassoli	In Progress
Artificial Intelligence , Grade: 19/20, Instructor: Dr. Fadayi & Dr. Yaghoobzadeh	Fall 2024
Computer Aided Design , Grade: 20/20, Instructor: Dr. Modarresi	Fall 2024
Algorithm Design , Grade: 19.4/20, Instructor: Dr. Asadpoor	Spring 2024
Formal Language and Automata Theory , Grade: 18.2/20, Instructor: Dr. Hojjat	Spring 2024
Computer Architecture , Grade: 19.5/20, Instructor: Dr. Safari	Spring 2024
Data Structures and Algorithms , Grade: 20/20, Instructor: Dr. Faili & Dr. Amiri	Fall 2023
Engineering Probability and Statistics , Grade: 19.8/20, Instructor: Dr. Tavassolipour	Fall 2023
Advanced Programming , Grade: 18.2/20, Instructor: Dr. Khosravi	Spring 2023
Introduction to Computing Systems and Programming , Grade: 20/20, Instructor: Dr. Hashemi	Fall 2022

Teaching Experiences

Computer Architecture

Instructor: Dr. Saeed Safari

- Teaching Assistant: Homework, quiz and computer assignment grader

Fall 2024 – Spring 2025
University of Tehran

Formal Language and Automata Theory

Instructor: Dr. Hosein Hojjat

- Teaching Assistant: Homework designer and grader

Fall 2024 – Spring 2025
University of Tehran

Introduction to Computing Systems and Programming

Instructor: Dr. Mahmoud Reza Hashemi

- Teaching Assistant: Laboratory TA, Final exam grader

Fall 2024
University of Tehran

Skills

Programming

- **Advanced:** Python, C++, C, Java
- **Intermediate:** VerilogHDL, SystemVerilog, LaTeX
- **Beginner:** SQL, Assembly, HTML, CSS

Tools

- Quartus, Multisim, Modelsim, Vivado, Linux, Git, FPGA boards, Jupyter Notebook, Tableau, PowerBI, Kafka, Apache Spark, Docker, Kubernetes, Spring, MySQL, MongoDB, Word, PowerPoint, Excel

Libraries

- PyTorch, TensorFlow, Scikit-Learn, Pandas, Numpy, Matplotlib, Seaborn, SciPY, PySpark, PyMongo, Selenium,

Interpersonal Skills

- Leadership, Teamwork, Problem-solving, Social skills, Critical thinking, Time management, Fast learning

Notable Projects

Compiler Designing for a new language CPY

Implementing the frontend of a compiler for a C-Python-like language using Java. It includes a full-featured Abstract Syntax Tree (AST), grammar and parsing modules, semantic analysis via visitor pattern, and a robust symbol table implementation.

- Language: Java

Fake News Detection

This project implements a Fake News Detection system using a Python-based data pipeline. It includes preprocessing, feature engineering, and classification to identify misinformation.

- Language: Python

AI-Powered Connect4 Game with Minimax Algorithm

Designed an AI-driven Connect4 game using the Minimax algorithm with alpha-beta pruning and a customizable difficulty. Features a Pygame interface for an engaging user experience.

- Language: Python

Lights Out Puzzle Heuristic Search

Analyzed various heuristic search algorithms, including BFS, IDS, A*, and Weighted A*, for solving the Lights Out Puzzle. Focused on optimizing search performance, node exploration, and execution time.

- Language: Python

Genetic Image Reconstruction

Developed a program that recreates images using genetic algorithms with mutation, crossover, and fitness evaluation for image refinement.

- Language: Python

Building Neural Network from Scratch

Implementing the core components of deep learning pipelines, including forward and backward passes, loss functions, optimizers, and training routines, without using deep learning libraries like TensorFlow or PyTorch.

- Language: Python

CNN for Image Classification with VGG16

This project demonstrates the application of Convolutional Neural Networks (CNNs) for image classification on the CIFAR-10 dataset, using transfer learning with the VGG16 architecture. The task is to classify 60,000 32×32 color images across 10 distinct classes.

- Language: Python

Hotel Price Prediction Classification ML

This machine learning project focuses on predicting hotel price categories based on various features such as hotel type, location, star rating, facilities, and user reviews. The goal is to use classification models to group hotels into distinct price brackets (low or high) and help users or agencies understand pricing trends.

- Language: Python

News Subject Clustering

An unsupervised clustering project using sentence embeddings from a pretrained transformer model and classic clustering techniques and then group news texts based on semantic similarity, enabling automatic categorization and exploration of textual datasets.

- Language: Python

Roulette Simulation Profit Analysis & Predicting 2016 USA Election & Drug Safety Test

This project consists of three data science mini-projects focused on statistical simulation, inference, and data analysis, implemented using Python and Pandas.

- Language: Python

Sampling & Airbnb Storytelling using Tableau

This project consists of two data science mini-projects composed of two main tasks: Langevin Dynamics Sampling Algorithm, and Airbnb Data Storytelling and Visualization in Tableau.

- Language: Python

Real-time Payment Data Pipeline using Kafka

This project is a comprehensive suite of real-time streaming applications built using Apache Spark Structured Streaming and Kafka, designed to perform advanced analytics on financial transaction data.

- Language: Python

Cancer Patient Survival Prediction Classification ML

Developed a machine learning pipeline to predict cancer patient survival status using clinical, demographic, and treatment data. The goal is to classify each patient as either Alive (1) or Deceased (0).

- Language: Python

Bike Rental Prediction Regression ML

Built a supervised machine learning regression model to predict the number of daily bike rentals based on weather, seasonal, and calendar-related features.

- Language: Python

Movie Recommender System ML

Implemented a trust-aware movie recommender system using traditional machine learning techniques (non-deep learning) to predict user ratings for unseen movies.

- Language: Python

Hokm Game

Implementing a complete 4-player version of the traditional Persian card game Hokm. Players take turns playing cards according to official rules, and teams compete to win hands and ultimately the game.

- Language: C

UT2T Messenger

A terminal-based messaging application written in C that allows users to sign up, log in, and interact with posts through a simplified social interface. It mimics the structure of a microblogging service with essential features like posting, liking, and managing content.

- Language: C

UTfood

Implemented a simplified console-based version of a food delivery system similar to SnappFood. It includes features for user registration, login, account management, restaurant and food menu management, and discount codes. The system supports three user roles: admin, customer, and restaurant.

- Language: C++

Class Scheduler

Implemented an automated weekly class scheduling system designed to assign course times and instructors to university classes without any conflicts. It is built to manage instructor availability, classroom time slots, and course requirements effectively.

- Language: C++

Place Visit Planner

Designed to efficiently plan and optimize a schedule for visiting a set of places within a given day based on constraints such as opening/closing times and place rankings.

- Language: C++

Mini Snapp-like Transportation Missions

Simulated a simplified version of a ride dispatch system where a central controller (Snap) manages missions and coordinates with drivers, similar to a logistics platform.

- Language: C++

Football Fantasy

A simulation of a Premier League Fantasy Football game. It allows users to manage fantasy teams, simulate matchweeks, and track scores and player performances using real-world data.

- Language: C++

Operating System Laboratory Projects

Worked with the xv6 Unix-like OS, focusing on kernel-level modifications and feature extensions. Projects included implementing and testing custom system calls, CPU scheduling, terminal I/O, memory management, and synchronization.

- Language: C

Operating System Projects

Explored socket programming and network communication for inter-process data exchange. Developed MapReduce systems and multi-threaded applications to implement distributed and parallel computing.

- Language: C++

Statistics and Probability Projects

Applied Bayes' theorem with text preprocessing and worked on distributions including binomial, Poisson, and normal. Covered Bayesian estimation, regression, and the Central Limit Theorem in analytical projects.

- Language: Python

Data Structures Projects

Built and tested data structures like stacks, queues, linked lists, heaps, trees, and graphs. Focused on recursive algorithms and time complexity analysis for efficiency.

- Language: Python

Algorithm Design Projects

Implemented algorithms using divide and conquer, dynamic programming, greedy techniques, and graph-based methods. Explored NP-complete problems and approximation algorithms.

- Language: Python

Computer Aided Design Projects

Designed an approximate multiplier and circular buffer, and synthesized modules using ACTEL. Implemented a processing array modeled after the Eyeriss accelerator. Also implementing a Maclaurin Series calculator using Pipeline.

- Language: VerilogHDL, SystemVerilog

Digital Logic Design Projects

Developed RTL modules for logic components and accelerators. Simulated and synthesized combinational and sequential circuits including gates, latches, and flip-flops.

- Language: VerilogHDL

Digital Logic Design Laboratory Projects

Built accelerators with wrappers, designed function generators, and implemented periodic signal generation. Synthesized sequential logic on FPGA platforms.

- Language: VerilogHDL, SystemVerilog

Computer Architecture Projects

Designed and simulated single-cycle, multi-cycle, and pipelined RISC-V processors. Implemented arithmetic units and integrated control and datapath for instruction execution.

- Language: VerilogHDL

Computer Architecture Laboratory Projects

In our Computer Architecture Lab course, we designed a pipelined ARM processor and implemented it on a development board. The processor includes hazard detection and forwarding units to handle data dependencies efficiently

- Language: VerilogHDL, SystemVerilog

Languages

English: Full professional proficiency

Persian: Native