Arash Hajisafi | Curriculum Vitae

(+98) 912 846 8256 • hajisafi@aut.ac.ir • hajisafiarash@gmail.com
arashhs.github.io • arashhs • arash-hajisafi

Education

Amirkabir University of Technology   **Tehran, Iran**
Bachelor of Science, *Computer Engineering*   *September 2017 – Present*
  CGPA: 19.08/20 (3.97/4)
  Advisor: Prof. Mehdi Rasti

Related Coursework:

- Principles of Computer & Programming: **20**
- Advanced Programming: **19.25**
- Software Engineering (I): **20**
- Operating Systems: **19.95**
- Engineering Statistics: **20**
- Applied Linear Algebra: **19.26**
- Theory of Machines and Languages: **19.75**
- Microprocessor and Assembly Language: **20**

Khaje Nasir High School   **Tehran, Iran**
High School Diploma, *Mathematics and Physics*   *2013 – 2017*
  GPA: 19.89/20

Research Interests

- Data Management and Analytics, Causal Inference, Algorithmic Fairness, Explainable AI
- Machine Learning, Statistical Relational Learning, Reinforcement Learning

Awards and Honors

2020: Currently Ranked Within the Top 5% of My Class in Computer Engineering Department with a CGPA of 19.08 (out of 20), Amirkabir University of Technology

2017: Received Full Tuition Waiver Scholarship from Amirkabir University of Technology

2017: Achieved the Top 0.2% Place Among All Applicants in the Iranian University Entrance Exam (nearly 140000 applicants)

2016: Awarded the Certificate of Honor at The **International Mathematical Kangaroo Contest**

2016: Graduated as the Valedictorian of My High School with a GPA of 19.89 (out of 20)

Experience

Research

Design and Analysis of a Secure Smart Card Based Healthcare System
Research Method and Technical Presentation Course   *February 2020 — August 2020*

- The research consists of 2 main parts, the investigation of smart card architectures and modeling security threats in an Electronic Healthcare System. A functional system architecture has been proposed to address these security threats which specifies a smart-card-based authentication method (includes both Written and Oral Presentations).

Industry

Gam Electronics Co.   **Tehran, Iran**
Software R&D Intern   *July 2020 – September 2020*

- Designing and building automated business processes
- Participating in the development of complex business processes
- Taking the high-level requirements and transforming them into functional specifications with detailed development plans
- Preparing and executing User Acceptance Testing (UAT) and developing improvement plans as well as taking accountability in fixing identified errors
- Creating Web Forms for the given specifications

Technical Skills

Programming Languages

- Python (inc. NumPy and SciPy) (Professional)
- Java (inc. Spring, Hibernate and Maven) (Professional)
- C (Professional)
- C++ (Intermediate)
- MATLAB (Intermediate)
- Arduino (Professional)
- ARM Assembly (Professional)
- VHDL (Professional)
- Lisp, Racket (Intermediate)
- Xv6 Kernel (Professional)
- FreeRTOS Kernel (Professional)

Miscellaneous

- MySQL (Professional)
- Git (Intermediate)
- LaTeX (Intermediate)
- Linux (Intermediate)
- OOP (Professional)
- XML (Intermediate)
- Flex and Bison (Professional)

Web Development

- HTML5 (Intermediate)
- CSS3 (Intermediate)
- Bootstrap 4 (Familiar)

Softwares

- Vivado Design Suite (Professional)
- Proteus Design Suite (Intermediate)
- Camunda Modeler (Intermediate)

Language Proficiency

- **English** (fluent) - **Persian** (mother tongue)
  - IELTS Band Score: 8 [Listening: 8.5, Reading: 8.5, Writing: 7, Speaking: 7]
  - TOEFL Total Score: 106 [Reading: 30, Listening: 26, Writing: 28, Speaking: 22]
  - GRE Score: To be taken on November 25

Selected Course Projects

- **Research Method - Design and Analysis of a Secure Smart-Card-Based Healthcare System**
  - Research Method and Technical Presentation course results of every step taken from deciding on a subject to the final writing and presentation

- **Advanced Programming - JTanks Game**
  - JTanks is a 2D tank game made in Java for the final project of my Advanced Programming course
  - Both multiplayer and single-player modes are implemented as well as a text-based map editor
  - A balanced loot-based system is implemented with various power-up items - varying from weapon-upgrades to items that reduce damage taken by the player
  - Featuring three different difficulty settings (Easy, Normal, and Hard), which impacts the maps, enemies, and the amount of damage taken by the player in the game
  - The project is based on Buffer-Strategy implementation and uses multi-threading techniques

- **Software Engineering (I) - That's MyTable V2**
  - Restaurant table booking and food reservation web application developed using Java, Spring MVC, Hibernate, and Maven
  - Forked from That's MyTable!, a Github repository on which we applied different software evolution and maintenance techniques to adapt the project with newer versions of Java and Spring framework and added many new functionalities such as food reservations and a better implementation for table booking and time management as well as fixing numerous bugs
  - Re-wrote the entire database from the ground up to adapt it with new functionalities

- **Database Design - Restaurant Management Database System**
  - A database system with GUI for restaurant management using Python, Tkinter library, and MySQL
  - Applied ER and normalization techniques to design the database and adopted Python to build a GUI app to connect with the database and add/delete/edit records and tables, and execute queries on the database

- **Computer Networks - NetWolf**
  - A Peer-to-Peer file sharing application implemented in Python
  - Discovering clusters and maintaining a cluster list at each node by periodically sending a UDP customized DISCOVERY message
  - Sharing files between nodes by sending a UDP customized GET message (which includes the file

names), waiting for the answer, and selecting the best node (fastest response), and then establishing a TCP connection for transmitting the file

- **Operating Systems - Threads and Ticket Lock Implementation in Xv6**
  - Implementing threads and ticket lock in Xv6's kernel
  - Modified Xv6 process allocation, execution, and termination implementations to add support for threads so that each process can have multiple threads
  - Modified scheduling algorithm to schedule threads and added Ticket Lock to the kernel

- **Operating Systems - Modified Xv6 with New Features**
  - Implemented a modified version of Xv6's original scheduling algorithm and a modified priority-based scheduling algorithm to take both the waiting time and importance of a task into account
  - Added system calls to choose the scheduling algorithm in a process, to count the number of called system calls in a process, and several more features
  - Added the ability to measure creation time, termination time, sleeping time, ready time, and running time of processes to evaluate the performance of the new scheduling algorithms

- **Real-Time and Embedded Systems - Modified Arduino FreeRTOS Scheduling**
  - Implementation of EDF and FCFS scheduling algorithms in FreeRTOS for Arduino boards

- **Compiler Design course - Compiler Project**
  - Lexical Analysis, Syntax Analysis, Semantic Analysis, and Intermediate Code Generation implemented using JFlex and Bison for the grammar which is included in the project's repository
  - Generated code representation is in three-address code format

- **Advanced Programming - Java Download Manager with GUI (JDM)**
  - A GUI Download Manager written in Java
  - Supporting multiple downloads at the same time (with the ability to limit the maximum number of concurrent downloads), blocking downloads from specific domains, and queueing

- **Simple Google Search Query Parser and Report Generator Web Application**
  - Implemented using Java, Spring Framework, and Maven to run on a Web server
  - A simple Google search query parser used for generating an organized excel file from Google search query results and retrieving various information on top search results (URL, domain, and some SEO information)

- **Signals and Systems - MATLAB Voice Gender Detection**
  - Gender detection project based on audio files written in MATLAB

- **Design Automation (FPGA) - Hardware Implementation of a Matrix Equation Solver Algorithm**
  - Implementation of a matrix equation solver algorithm in VHDL

- **Logic Circuits - Elevator Circuit**
  - An elevator circuit designed and implemented in Verilog

- **Advanced Programming - Battleship Game**
  - Battleship game implemented in Java
  - Supports both single-player and local multiplayer modes

- **Applied Linear Algebra - Simple Image Compressor**
  - Implementing an image compression algorithm in Python using NumPy library and solving some Total Least Square problems

- **Programming Languages - NUMEX Interpreter**
  - A pure functional implementation of NUMEX (Number Expression Programming Language) in Racket

- **Introduction to Programming - Hangman**
  - A terminal-based Hangman game written in C which has save/load options and other features

Further details regarding the projects are available through arashhs.github.io/#projects

Extra-Curricular Activities

○ **High School Student Council President**
I was the Student Council President during my senior years at Khaje Nasir High School and tried to do my best to bring everyone together and help the students to exert 100% of their abilities while growing together as a team and experiencing the joy of learning.

○ **Website Moderator and Video Content Creator**
I was responsible for moderating GameemaG's website (a credible video game related website in Iran which changed its name to VGMag) as well as the discussion board and creating video content for it in 2013.

References

Hamed Farbeh, Assistant Professor
Department of Computer Engineering
Amirkabir University of Technology
✉ farbeh@aut.ac.ir
🌐 https://ceit.aut.ac.ir/~farbeh/

Mehdi Rasti, Assistant Professor
Department of Computer Engineering
Amirkabir University of Technology
✉ rasti@aut.ac.ir
🌐 https://aut.ac.ir/cv/2423/Mehdi-Rasti

Amir Kalbasi, Assistant Professor
Department of Computer Engineering
Amirkabir University of Technology
✉ kalbasi@aut.ac.ir
🌐 https://aut.ac.ir/cv/2241/Amir-Kalbasi

Nastooh Taheri Javan, Lecturer
Department of Computer Engineering
Amirkabir University of Technology
✉ nastooh@aut.ac.ir
🌐 https://ceit.aut.ac.ir/~nastooh/