Ava Mirmohammad Mehdi

Bachelor student at University of Tehran

Currently living in Tehran, Iran

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Education

University of Tehran   **2020 – Current**

Bachelor student in Computer Engineering   *Tehran, Iran*

- GPA: 19.04/20 (3.98/4) – Avg. Dept. GPA: 15.01/20
- Last year GPA: 19.13/20 (4/4)
- Selected Courses: Real-Time Embedded Systems (17.4/20), Introduction to Distributed Computing (20/20), Operating System (18.4/20) Computer Networks Security (19.6) Machines and Language Theory (19/20), Compiler Design and Programming Languages (20/20), Introduction to Software Testing (18/20),

Aboureihan High School   **2016 – 2019**

Diploma in Mathematics and Physics   *Tehran, Iran*

- GPA: 19.91/20 (4/4)

Research Interests

- Formal Methods
- Software Verification
- Programming Languages
- Security and Privacy

Research Experience

Research Assistant at Formal Methods and Validation of Systems Lab   **September 2024 – Current**

Under the Supervision of Professor Fatemeh Ghassemi   *Tehran, Iran*

- Modeling and analyzing scheduling algorithms with timed automata

Internship at Max Planck Institute for Software Systems   **July 2023 – September 2023**

Under the Supervision of Professor Rupak Majumdar   *Kaiserslautern, Germany*

- Worked on the implementation of TruSt (Truly Stateless, Optimal Dynamic Partial Order Reduction) which is a DPOR algorithm in Lincheck, a practical framework for testing concurrent data structures on JVM.
- Repository: https://github.com/rupakm/lincheck

Academic Projects

Software Testing Course Projects | *JUnit, Java*   **September 2023 – January 2024**

- Each phase focuses on a certain testing approach for testing an e-commerce system built using Spring Boot:
  - Unit Testing and Test Doubles
  - Graph-Based Testing and Analyzing Code Coverage with JaCoCo
  - API Testing: Validating the behavior of RESTful APIs
  - Mutation Testing
  - Behavior-Driven Development (BDD) and performing Recorded GUI testing using Katalon Recorder

LogicPL Compiler | *Java*   **March 2023 – June 2023**

- In each of the phases of this project, the following implementations are done:
  - Phase 1: Lexical analyzer and syntax analyzer
  - Phase 2: Abstract syntax tree, node visitor pattern, symbol table, and name analyzer
  - Phase 3: Type analyzer
  - Phase 4: Code generation (Java bytecode)

Data Science Course Projects | *Python*   **February 2024 – June 2024**

- Feature Engineering Techniques
- Dimensionality Reduction and Unsupervised Learning
- Semi-Supervised Learning and LLMs

Cyber-Physical Systems Course Projects | *C++, QML, QT*   **February 2024 – June 2024**

- Implementing a cloud-based Entrance Control System over IOT which consists of four main components:

- The Embedded System: Reading the RFID tag and sending the information to the server for authentication
- The Proteus Simulation: Simulating the RFID reader and the door that is controlled by the embedded system
- The Server: Authenticating the users and controlling the access to the secure area
- The Monitoring System Client: Showing the access control system's status and retrieving the users' access history
- Developed an Android application for user authentication: Used the accelerometer and gyroscope sensors to authenticate users based on their motion patterns

Distributed Systems Course Projects | *Golang*   **February 2024 – June 2024**
- Developed a distributed ordering system using gRPC and Protobuf

- Developed a concurrent ticket reservation system using Go's built-in concurrency features like goroutines and channels

Extending xv6 Operating System | *C*   **October 2022 – December 2022**
- Added some Console features and system calls to xv6 operating system
- Implemented process scheduling including Round Robin and BJF queue
- Implemented dining philosophers simulation with semaphores

Operating System Course Projects | *C++, C*   **October 2022 – December 2022**
- Implemented buyers and sellers using Socket Programming
- Implemented a MapReduce framework to count the number of books in each genre
- Developed a multi-threaded image processing program

Teaching Experience

Formal Languages and Automata Theory   **Fall 2024 – Current**
Head Teaching Assistant, Prof. H.Hojjat

Software Testing   **Fall 2024 – Current**
Computer Assignment Designer, Prof. E.Khamespanah

Database Design   **Spring 2024 – Current**
Homework Designer, Prof. A.Shakery

Advanced Programming   **Spring 2022 – Current**
Computer Assignment Designer, Prof. R.Khosravi

Design of Algorithm   **Spring 2022 – Current**
Computer Assignment and Homework Designer, Prof. M.Dousti

Formal Languages and Automata Theory   **Spring 2022 – Spring 2024**
Homework Designer, Prof. H.Hojjat

Computer Aided Design   **Fall 2023**
Computer Assignment Designer, Prof. M. Modarresi, Prof. M.Salehi Ersali

Data Structures   **Spring 2022**
Grader, Prof. H.Faili

Technical Skills

Languages: C++, C, Python, Java, Go, Verilog, SQL, MongoDB, Elasticsearch, HTML/CSS, MATLAB, LaTeX
Technologies/Frameworks: Linux, Git, Modelsim-Altera, Arduino

Honors and Awards

- Ranked top 3 out of 80 B.Sc. students at University of Tehran   2021 – 2024
- Granted straight admission to the Master's degree at Sharif University of Technology and University of Tehran (Not Attended)   2024
- Received scholarship from Supporter Foundation of the University of Tehran   2023
- Ranked 155 out of 160,000 participants in the university entrance exam (Top 0.1%)   2020

Languages

Persian: Native
English: Advanced, IELTS Academic: 8 (L:8.5, R:8, W:7, S:8)
Arabic: Elementary Proficiency

Voluntary Works

- Collaborated with organizers and staff to ensure smooth execution of the selection event of ICPC (International Collegiate Programming Contest) at University of Tehran   2024
- Staffed a welcome event for new Computer Engineering students   2023