

# AMIRMAHDI NAMJOO

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## Education

### Sharif University of Technology

September 2018 – June 2023 (Expected)

Bachelor of Science in Computer Engineering

Tehran, Iran

- Overall GPA: 19.58/20.00
- Major GPA: 19.826/20.00
- Rank: 5/136

## Honors and Awards

Cornell, Maryland, Max Planck Pre-doctoral Research School 2021

2021

- I was among about 80 talented students who got accepted and participated in **CMMRS 2021**

National University Entrance Exam (Konkur)

2018

- **Ranked 81<sup>st</sup>** among more than 144,000 participants (top 0.06%)

National Olympiad in Astronomy and Astrophysics

2017

- **Bronze Medal** in National Olympiad in Astronomy and Astrophysics among more than 10,000 participants.

## Research Interests

- Computer Security & Privacy
- High Performance Computing
- Operating Systems
- Computer Architecture

## Experience

### Sharif University of Technology

September 2020 – Now

Research Experience

January 2022 - Now

- Research Assistant at **S4Lab (Safety and Security at Software Systems)** - Under supervision of Dr. Mehdi Kharrazi
- I am researching control flow graphs and vulnerability path similarity measures. I am working on methods to generate different dynamic CFGs of vulnerable codes when they are exploited, using Intel Pin and CFGGrind to develop a vulnerability and exploit classification framework based on the similarity of CFGs.
- I am implementing a Cyberrange website, using Django for Backend API, Go for core infrastructure orchestration, Docker, and React. I Incorporated different security concepts to design multiple problem sets for the project to educate the users on DDOS, Insider and Web attacks and defenses.

Teaching Experience

September 2019 - Now

- Head Teaching Assistant - **Computer Networks** - Dr. Laleh Arshadi - Spring 2022
- Head Teaching Assistant - **Design of Algorithms** - Dr. Hamid Zarrabi-Zadeh - Fall 2022
- Head Teaching Assistant - **Artificial Intelligence** - Dr. Mohammad Hossein Rohban - Fall 2022
- Co-Head Teaching Assistant - **Discrete Structures** - Dr. Hamid Zarrabi-Zadeh - Spring 2022
- Head Teaching Assistant - **Advanced Programming in Java** - Dr. MohammadAmin Fazli - Spring 2022 & Spring 2021
- Head Teaching Assistant - **Fundamentals of Programming in C** - Dr. MohammadAmin Fazli - Fall 2022 & Fall 2021
- Head Teaching Assistant - **Fundamentals of Programming in C** - Mr. Reza Fakouri - Fall 2020
- Teaching Assistant - **Computer Security** - Dr. Mehdi Kharrazi - Fall 2022
- Teaching Assistant - **Operating Systems** - Prof. Hossein Asadi - Fall 2022
- Teaching Assistant - **Operating Systems** - Dr. Mehdi Kharrazi - Spring 2022
- Teaching Assistant - **Computer Networks** - Dr. Mahdi Jafari Siavoshani - Spring 2022 & Fall 2021
- Teaching Assistant - **Computer Architecture** - Prof. Hossein Asadi - Spring 2021
- Teaching Assistant - **Computer Structure and Language** - Dr. Laleh Arshadi - Spring 2021 & Fall 2020
- Teaching Assistant - **Compiler Design** - Mr. Mohammad Reza Bahrami - Spring 2022
- Teaching Assistant - **Design of Algorithms** - Dr. Hamid Zarrabi-Zadeh - Fall 2021
- Teaching Assistant - **Artificial Intelligence** - Dr. Mohammad Hossein Rohban - Spring 2022 & Fall 2021 & Spring 2021
- Teaching Assistant - **Artificial Intelligence** - Dr. Mahdiah Soleymani - Fall 2020
- Teaching Assistant - **Data Structures and Algorithms** - Prof. Ghodsi and Dr. Safarnejad - Spring 2021
- Teaching Assistant - **Discrete Structures** - Dr. Hamid Zarrabi-Zadeh - Spring 2021
- Teaching Assistant - **Probability and Statistics for Engineering** - Dr. Ali Sharifi Zarchi - Fall 2020

- Teaching Assistant - **Probability and Statistics for Engineering** - Dr. Naeemeh Omidvar - Spring 2022
- Teaching Assistant - **Computer Simulation** - Dr. Alireza Farhadi - Spring 2021
- Teaching Assistant - **Numerical Computations** - Dr. Fatemeh Baharifard - Fall 2020
- Teaching Assistant - **Advanced Programming in Java** - Dr. Mostafazadeh, Mr. Isazadeh, Mr. Malekzadeh, and Mr. Chekah - Spring 2022
- Teaching Assistant - **Fundamentals of Programming in C** - Mr. Reza Fakouri and Dr. Shirin Baghoolizadeh - Fall 2019

## Digikala

July 2021 - July 2022

### Software Engineer

- Digikala is the largest e-commerce company in Iran.
- Worked on Supernova platform, Digikalajet and Pindo using PHP, MySQL, Elasticsearch, Jenkins, and Swagger. I implemented a voucher system for Digikalajet (an on-demand supermarket) from scratch, incorporating different business logic into the PHP (Symfony) code to allow batch and specialized discount voucher codes.

## Academic Service

### Sharif University of Technology

September 2019 – Now

#### President of Central Council of Students' Scientific Chapter

September 2022 - Now

- Students' Scientific Chapter (SSC) is a scientific association consisting of all students of the Computer Engineering Department. It holds and organizes scientific talks, tournaments, and events targeting different audiences, from first-year undergraduate students to Ph.D. students throughout the year. Its central council consists of nine members, selected by votes of all students. I am selected as the president of SSC for one academic year by gaining the most votes in the general election and then gaining the votes of other central council members.

### Staff

Fall 2019 - Now

- Technical Staff of DataDays 2022
- Scientific Staff of Webelopers 2022
- Scientific Staff of Hardwar 2022
- Scientific Staff of Winter Seminar Series (WSS) 2022
- Scientific Staff of DataDays 2021
- Technical Staff of ICPC 2019 Asia West Continent Final
- Technical Staff of ICPC 2019 Asian Regional - Tehran Site

## Projects

### Peykar | *Django, React, Docker, Go, Grafana, Splunk* | Github

May 2022 - Now

- Peykar is a Cyber-Range platform that is being designed to provide different challenges to security specialists to improve their ability and make them ready for real threats.
- This project is being done in the S4Lab under supervision of Dr. Mehdi Kharrazi.
- I have roles in different parts of the project, including its core infrastructure, backend API, and designing some of the challenges offered on the site.

### PintOS | *C* | Github

March 2021 - May 2021

- Completed a multi-phase project on PintOS using C language. It was based on Berkeley's CS162 course.
- The project included designing and implementing User Programs, Thread, Scheduling, and File System on PintOS.

### Multi-Core Computing Course Projects | *Open MP, CUDA, SIMD* | Github

February 2022 - August 2022

- Sobel Edge-detection Filter using Nvidia CUDA
- Green screen replacement using Nvidia CUDA and Intel CPU's Vector Processing (SIMD)
- N-Queens solver using Open MP

### Computer Networks Course Projects (P2P Network) | *Python* | Github

June 2021 - August 2021

- Designed and implemented a Peer-to-Peer Chat application from IP to application layer using Python. The network topology was a specific form of a binary tree that connected each peer to other peers with complex rules in a fully decentralized structure.

### CMinus Compiler | *Python* | Github

September 2021 - January 2022

- Implemented a Compiler for CMinus Language, a simplified subset of the C language, using Python and its standard libraries.
- The compiler consisted of Lexer, Parser, Code Generator, and Semantic Analyzer.

### Computer Architecture Course Project | *Quartus, GEM5* | Github

June 2020 - July 2020


- Designed and tested a multi-cycle CPU based on MIPS architecture using Quartus
- Designed and tested different cache configurations using GEM5

**Health Monitoring System** | *Raspberry Pi, Arduino, Simplify3D* |  Github **February 2022 - August 2022**


- Implemented and designed a Health Monitoring System that can measure a patient's SpO2, heart rate, body temperature, ECG, and Environmental Temperature and Humidity.
- It features a complete monitoring system that can be viewed on displays with different sizes. This product sends the collected data to a central server for further analysis.

**Arno** | *Django, React, Docker, Visual Paradigm* |  Github **May 2022 - September 2022**

- Designed and implemented an online service requesting system using the UP methodology in this project.
- The final product includes extensive documentation of requirements, use cases, class, activity, sequence, ER, and deployment diagrams.

**Realtime Systems Course Project** | *Realtime Java, Swing* |  Github **June 2022 - July 2022**

- Implemented a real-time Clock management system using threading capabilities of Realtime Java, alongside a minimalistic GUI using Swing.

**TeleNurse** | *Django, Postgres, Docker, Bootstrap* |  Github **October 2021 - February 2022**


- Telenurse is a logistic project for providing healthcare and nursing.
- It is an integrated system so that both nurses and people who need nursing and medical services at home can use it and communicate easily with each other.

**AI Course Projects** | *Python, Sklearn, Tensorflow, Matplotlib, PyQt* |  Github **March 2020 - August 2020**

- Local Search Algorithms - Hill Climbing and Simulated Annealing - Genetic Programming for Symbolic Regression - Decision Tree Classifier - SVM Classifier - Multilayer Perceptron Neural Networks

**Tarakav** | *ASP.NET Core, Elasticsearch, Kibana, Angular, Ogma, Kibana APM* |  Github **September 2020**

- Tarkav is a Graph Analysis Web Application for bank transaction analysis, featuring path finding and max flow, which can be used to detect financial fraud.

**Acute Myeloid Leukemia Microarray Analysis** | *R, limma, ggplot2* |  Github **January 2021 - February 2021**

- Used the R programming language for Acute Myeloid Leukemia Micro-array Analysis using NCBI GEO dataset.

## Coursework

Computer Security	Dr. Mehdi Kharrazi	20.0/20.0
Operating Systems	Dr. Mehdi Kharrazi	19.7/20.0
Computer Architecture	Prof. Hossein Asadi	20.0/20.0
Multi-core Computing	Dr. Hajar Falahti	20.0/20.0
Computer Networks	Dr. Jafari Siavoshani	20.0/20.0
Compiler Design	Dr. Gholamreza Ghassem-Sani	20.0/20.0
Realtime Systems	Dr. Mohsen Ansari	20.0/20.0
Database Design	Dr. Abbasi Heydarnoori	20.0/20.0
Digital System Design	Dr. Farshad Baharvand	20.0/20.0
Object Oriented Design	Dr. Raman Ramsin	19.9/20.0
System Analysis and Design	Dr. Jafar Habibi	20.0/20.0
Signals and Systems	Dr. M.T. Manzuri Shalmani	20.0/20.0
Design of Algorithms	Dr. Hamid Zarrabi-Zadeh	20.0/20.0
Data Structures and Algorithms	Prof. Mohammad Ghodsi	20.0/20.0

## Technical Skills

**General Programming Languages:** C, C++, Go, Python, Java, Javascript, PHP, C#, R

**Assembly Programming Languages:** MIPS, x86

**Typsetting Languages:** LaTeX, Markdown

**Hardware Description Languages:** Verilog

**Developer Tools:** Git, Docker, Swagger, Jenkins

**Web Technologies/Frameworks:** Django, Symfony, ASP.net Core, React, MySQL, Postgres, MongoDB, Elasticsearch

**Security Related Tools:** IDA Pro, Radare2, nmap, John, Wireshark, AFL, CFGGrind, Intel Pin

**High Performance Computing Tools:** CUDA, Open MP, Intel SIMD Instructions

**Data Science Libraries:** Sklearn, Matplotlib, Numpy, Pytorch, Tensorflow

**Hardware Development Boards:** Raspberry Pi, Arduino

## Languages

**English:** Professional working proficiency (TOEFL: 109)

**Persian:** Native proficiency

**Arabic:** Elementary proficiency