

AMIRMAHDI NAMJOO

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Education

University of Southern California

Ph.D. Student in Computer Engineering

- Annenberg Fellowship Recipient

May 2026 – Present

Los Angeles, United States

University of Maryland, College Park

Master of Science in Computer Science

- GPA: 4.00/4.00
- Initially a Ph.D. student, then transferred to USC Computer Engineering Ph.D. Program.

August 2024 – May 2026

College Park, United States

Sharif University of Technology

Bachelor of Science in Computer Engineering

- Overall GPA: 19.61/20.00
- Major GPA: 19.82/20.00
- Rank: 4/130

September 2018 – July 2023

Publications & Preprints

- **A. Namjoo**, S. Yadav, H. Hosseini, B. Asgari, "Situla: Studying the Interplay of Sparse Formats and CPU/GPU Libraries." *Proceedings of the 2026 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)*, 2026.
- S. Yadav, **A. Namjoo**, B. Asgari, "Misam: Machine Learning Assisted Dataflow Selection in Accelerators for Sparse Matrix Multiplication." *Proceedings of the 58th IEEE/ACM International Symposium on Microarchitecture (MICRO)*, 2025.
- U. Bakhtiar, **A. Namjoo**, B. Asgari, "Chasoñ: Supporting Cross HBM Channel Data Migration to Enable Efficient Sparse Algebraic Acceleration." *Proceedings of the 58th IEEE/ACM International Symposium on Microarchitecture (MICRO)*, 2025.
- H. Chitsaz, J. Umeike, **A. Namjoo**, B. N. Safa, B. Asgari, "Belenos: Bottleneck Evaluation to Link Biomechanics to Novel Computing Optimizations." *Proceedings of the IEEE International Symposium on Workload Characterization (IISWC)*, 2025.
- **A. Namjoo**, S. Yadav, H. Hosseini, B. Asgari, "Situla: Studying the Interplay of Sparse Formats and CPU/GPU Libraries." *Poster in IEEE International Symposium on Workload Characterization (IISWC)*, 2025.
- S.P. Neshaei*, **A. Namjoo***, P. Chavoshian, P. Saremi, M.T. Jahani-Nezhad, A. Kousheshi, M.A. Fazli, "Novel Distance-Learning Methods to Overcome Challenges Caused by Covid-19 in Undergraduate Programming Courses," *14th International Conference on Education and New Learning Technologies (EDULEARN 2022)*, 2022, (doi:10.21125/edulearn.2022.2233), (* equal contribution).

Research Interests

- Computer Systems
- Machine Learning
- Computer Architecture
- Systems for ML
- Hardware-Software Co-Design
- Memory- and Energy-Efficient Computing

Honors and Awards

National University Entrance Exam for Masters of Iran

2023

- **Ranked 8th** at the Iranian National University Entrance Exam for Masters in Computer Engineering

Ministry of Science, Research and Technology of Iran

2022

- **Ranked 12th** at the Iranian National University Olympiad in Computer Engineering

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 of Iran (Konkur)

2018

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

National Olympiad in Astronomy and Astrophysics

2017

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

Experience

University of Maryland, College Park

August 2024 – May 2026

Research Experience

August 2024 – May 2026

- Research Assistant at **CASL (Computer Architecture & Systems Lab)** - Under supervision of Dr. Bahar Asgari
- My research is broadly on domain-specific architectures. Current research is focused on designing scheduling systems for heterogeneous accelerators by leveraging SNICs, novel architectures, and ML algorithms.

Teaching Experience

August 2024 – May 2026

- Teaching Assistant - **CMSC 411: Computer Systems Architecture** - Dr. Bahar Asgari - Spring 2026
- Teaching Assistant - **CMSC 411: Computer Systems Architecture** - Dr. Bahar Asgari - Spring 2025
- Teaching Assistant - **CMSC 422: Introduction to Machine Learning** - Dr. Mohammad Nayeem Teli - Fall 2024

Sharif University of Technology

September 2020 – July 2024

Research Experience

January 2022 – June 2023

- Research Assistant at **S4Lab (Safety and Security at Software Systems)** - Under supervision of Dr. Kharrazi

Teaching Experience

September 2019 – July 2024

- Head Teaching Assistant
 - * **Fundamentals of Programming in C** ×4 - **Advanced Programming in Java** ×3
 - * **Computer Networks** ×1 - **Artificial Intelligence** ×1 - **Design of Algorithms** ×1 - **Discrete Structures** ×1
 - * **Probability and Statistics for Engineering** ×1 - **System Analysis and Design** ×1
- Teaching Assistant (Including Head Teaching Assistant)
 - * **Artificial Intelligence** ×6 - **Computer Networks** ×5
 - * **Fundamentals of Programming in C** ×5 - **Advanced Programming in Java** ×4
 - * **Operating Systems** ×4 - **Computer Architecture** ×3 - **Compiler Design** ×3
 - * **Probability and Statistics for Engineering** ×3 - **Design of Algorithms** ×2 - **Discrete Structures** ×2
 - * **Machine Learning** ×1 - **Computer Security** ×1 - **Computer Structure and Language** ×2
 - * **Scientific and Technical Presentation** ×1 - **System Analysis and Design** ×1 - **Computer Simulation** ×1
 - * **Data Structures and Algorithms** ×1 - **Numerical Computations** ×3

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

University of Maryland, College Park

August 2025 – May 2026

Peer Reviewer, IEEE MICRO

February 2026

Student Volunteer & Peer Reviewer, SPICE Workshop, MICRO 2025

August 2025- October 2025

Sharif University of Technology

September 2019 – September 2023

President of Central Council of Students' Scientific Chapter

September 2022 - September 2023

- 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 was 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 - September 2023

- Chief of Staff - ICPC 2022 Asia Regional in Tehran Site
- Vice Chair - Code to Poem (Spaghetti Code Contest) 2024
- Executive Staff - ASMMasters (Assembly and Low-Level Programming Contest) 2023
- Executive Staff - Codocodile Algorithmic Contest 2023
- Vice Chair - Winter Seminar Series (WSS) 2023
- Executive Staff - Hardwar (Embedded and IoT contest) 2023
- Technical Staff - DataDays (Data Science Contest) 2022
- Scientific Staff - Webelopers (Web development Contest) 2022
- Scientific Staff - Hardwar (Embedded and IoT contest) 2022
- Scientific Staff - Winter Seminar Series (WSS) 2022
- Scientific Staff - DataDays (Data Science Contest) 2021
- Technical & Executive Staff - ICPC 2019 Asia West Continent Final and Asia Regional in Tehran Site

Projects

- Adaptive SpMM Scheduling Simulator** | *Python, SciPy, SimPy* |  GitHub **October 2024 – December 2024**
- Designed and implemented a distributed Sparse Matrix Multiplication simulation framework for heterogeneous accelerator nodes, modeling SIGMA, GAMMA, and OuterSPACE dataflows.
 - Implemented matrix analysis, Greedy and LPT scheduling, window-based task scheduling, and evaluation metrics including makespan, utilization, and throughput.
- 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
- CalcuLatency** | *FastAPI, Python, Leaflet.js, OS-Level Network analysis, Scapy* | **October 2024 – December 2024**
- CalcuLatency is a replication of a paper with the same name designed to detect proxy/VPN usage by measuring differences in network latency and Geolocating users based on that.
 - Worked in a two-person team; I was responsible for all technical implementation and analytical aspects, including backend development, coding measurement tools for ping and TCP delay times, and analyzing data to detect potential VPN usage.
- 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.
- Computer Networks Course Projects (P2P Network & P4)** | *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.
 - Implemented UDP, TCP and Access Control List on a switch using P4 Language
- 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.
- Peykar** | *Django, React, Docker, Go, Grafana, Splunk* | **May 2022 – May 2023**
- Peykar is a Cyber-Range platform that has been designed to provide different challenges to security specialists to improve their ability and make them ready for real threats.
 - This project was conducted at S4Lab under supervision of Dr. Mehdi Kharrazi.
 - I had roles in different parts of the project, including its core infrastructure, backend API, and designing some of the challenges offered on the site.
- 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
- 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 documentation of requirements, use cases, class, activity, sequence, ER, and deployment diagrams.
- Health Monitoring System** | *Raspberry Pi, Arduino, Simplify3D* |  GitHub **February 2022 – August 2022**
- Designed and implemented 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.
- 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
- Advanced Computer Graphics Projects** | *Python, PyTorch, Nerfstudio, NeRF* **August 2025 – December 2025**
- Implemented core components of a Python/PyTorch path tracer, including depth integration, thin-lens camera modeling, sample warping, point and area lighting, reflection/refraction, Whitted-style ray tracing, brute-force path tracing, and inverse rendering.
 - Conducted a project on Nerfacto robustness by training and evaluating NeRF models on clean and degraded image datasets with Gaussian noise, color jitter, and blur. Evaluated reconstruction quality using PSNR, SSIM, LPIPS, and visual comparisons to analyze the impact of Nerfacto components such as proposal sampling, appearance embeddings, camera optimization, and regularization.

- Evaluated attributional bias in LLM toxicity detection by running GPT-OSS-120B and LLaMA-3.1-8B experiments on counterfactual author identities and analyzing attribution shift, false-positive disparity, alignment bias, calibration, and model differences.

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

- Compared OpenMP, Intel TBB, C++ Parallel STL, OpenMPI, and Intel MPI across NAS Parallel Benchmarks and SPEC HPC 2021 workloads on UMD's Zaratan HPC cluster.
- Profiled scalability, synchronization overhead, NUMA behavior, communication costs, and runtime bottlenecks using Intel VTune, HPCToolkit, and custom MPI instrumentation.

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

- Solved problems of Rosalind website that were related to the Introduction to Bioinformatics course and Bioinformatics Algorithms book using C++.

- Designed and Implemented a clone of the Duelyst as part of the Advanced Programming course using Java and JavaFX.

Technical Skills

Programming, Scripting, and Typesetting Languages: C, C++, Python, Java, JavaScript, PHP, C#, Go, R, Rust, MIPS, x86, Verilog, P4, $\LaTeX$, Markdown

Machine Learning, Data Science, and High-Performance Computing: PyTorch, CUDA, Triton, NumPy, OpenMP, MPI, Sklearn, Matplotlib, TensorFlow, Intel SIMD, Intel MKL, ARMPPL

Software Engineering, Web, and Infrastructure: Django, Symfony, ASP.NET Core, React, Express, MySQL, Postgres, MongoDB, Elasticsearch, Redis, Docker, Kubernetes, Jenkins, Ansible, Splunk, Swagger, Git

Security, Network, and Hardware: IDA Pro, Radare2, nmap, Wireshark, AFL, Intel Pin, Raspberry Pi, Arduino

Select Coursework

University of Maryland, College Park (M.S./Ph.D.)

Domain Specific Architecture	Dr. Bahar Asgari	A+
Systems for Machine Learning	Dr. Abhinav Bhatele	A+
Foundation of Parallel Computing Graphics	Dr. Abhinav Bhatele	A+
Advanced Computer Graphics	Dr. Matthias Zwicker	A+
High Performance Computing	Dr. Alan Sussman	A
Advanced Numerical Optimization	Dr. Tom Goldstein	A
Computer and Network Security	Dr. Dave Levin	A

Sharif University of Technology (B.Sc.)

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

Languages

English: Professional working proficiency - TOEFL: 113/120 (R: 30, L: 30, S: 25, W: 28)

Persian: Native proficiency