

# Mahbod Afarin

POSTDOCTORAL SCHOLAR, COMPUTER SCIENCE, UC SAN DIEGO

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## EDUCATION

- **Doctor of Philosophy (Ph.D.)**, Computer Science, University of California Riverside, California, USA. Jan' 20 - Jun' 25
  - **Thesis:** *"Redundancy Removal for Accelerating Graph Processing Workloads"*
  - **Advisors:** Professor Rajiv Gupta & Professor Nael Abu-Ghazaleh
  - **GPA:** 3.86/4
- **Master of Science (M.Sc.)**, Computer Engineering (Computer System Architecture), Sharif University of Technology, Tehran, Iran. Sep' 15 - Jan' 18
  - **Thesis:** *"Improving Manufacturing Yield and Life Cycle of Special Purpose SIMT Processors for Inexact Computing"* (**Thesis Grade:** Excellent)
  - **Advisors:** Professor Shaahin Hessabi
  - **GPA:** 4/4 (19.03/20) (Ranked 7th among 83 Computer Engineering students)
- **Bachelor of Science (B.Sc.)**, Computer Engineering (Computer System Architecture), Shahed University, Tehran, Iran. Sep' 11 - Jun' 15
  - **Thesis:** *"Comparative Study of SystemC-Based Design Tools Using the Mano Processor Implementation"* (**Thesis Grade:** Excellent)
  - **Advisors:** Professor Naser Mohammadzadeh
  - **GPA:** 3.63/4 (17.53/20) (Ranked 1st among all Computer Engineering students)

## RESEARCH EXPERIENCE

- **Postdoctoral Scholar:** Postdoctoral researcher at the PRISM (Processing with Intelligent Storage and Memory) Center at UC San Diego, working under the supervision of Professor Tajana Rosing (Jun' 25 - Present).
- **Graduate Research Assistant:** Graduate Research Assistant at the GRASP (Graph Analytics with Scalability and Performance) Center at UC Riverside, working under the supervision of Professor Rajiv Gupta & Professor Nael Abu-Ghazaleh (Jan' 20 - Jun' 25).
- **Graduate Research Assistant:** Graduate Research Assistant at the (RIPLE) RIVerside Programming Language & Software Engineering Center at UC Riverside, working under the supervision of Professor Rajiv Gupta & Professor Nael Abu-Ghazaleh (Jan' 20 - Jun' 25).
- **Research Intern:** Conducting research in the Inter-procedural Identical Basic Block Folding as part of the GCC compiler optimization team under the supervision of Dr. Sriraman Tallam at Google (Sep' 24 - Jan' 25).
- **Graduate Research Assistant:** Graduate Research Assistant at the VLSI-Lab (Very Large Scale Integration Laboratory) at Sharif University of Technology, working under the supervision of Professor Shaahin Hessabi (Dec' 15 - Jan' 18).

## AWARDS & ACHIEVEMENTS

- Won **UCR Dissertation Completion Fellowship Award** at UC Riverside, 2024.
- Received the **Excellent Service** badge in all three cycles of ASPLOS'24 Artifact Evaluation at ACM International Conference on Architectural Support for Programming Languages and Operating Systems, San Diego, 2024 ([Certificate of Appreciation](#)).
- Won **UCR GSA Travel Grant Award** at University of California, Riverside, 2023.
- Won **Dean's Distinguished Fellowship Award** at University of California, Riverside, 2019.
- **Ranked 7th** in terms of total GPA among 83 Computer Engineering students in Sharif University of Technology (**Top 8%**), 2018.
- Admitted as an **Exceptional Talent** at Sharif University of Technology for M.Sc, 2015.

- **1st Rank**, Achievement of the highest GPA in B.Sc among all Computer Engineering graduated students in Shahed University, 2015.

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## PUBLICATIONS

- [*EuroSys'24*] X. Jiang, **M. Afarin**, Z. Zhao, N. Abu-Ghazaleh, R. Gupta, “**Core Graph: Exploiting Edge Centrality to Speedup the Evaluation of Iterative Graph Queries**,” *2024 Proceedings of the Nineteen European Conference on Computer Systems* (*Acceptance Rate: 15.99%*) (*Contributed Equally with the First Author*).
- [*MICRO'23*] C. Gao, **M. Afarin**, S. Rahman, N. Abu-Ghazaleh, R. Gupta, “**MEGA Evolving Graph Accelerator**,” *2023 56th Annual IEEE/ACM International Symposium on Microarchitecture* (*Acceptance Rate: 22%*) (*Contributed Equally with the First Author*).
- [*ASPLOS'23*] **M. Afarin**, C. Gao, S. Rahman, N. Abu-Ghazaleh, R. Gupta, “**CommonGraph: Graph Analytics on Evolving Data**,” *International Conference on Architectural Support for Programming Languages and Operating Systems*. (*Acceptance Rate: 26.66%*)
- [*HOPC'23*] **M. Afarin** et al., “**CommonGraph: Graph Analytics on Evolving Data (Abstract)**,” *In Proceedings of the 2023 ACM Workshop on Highlights of Parallel Computing*.
- [*BigData'23*] A. Mazloumi, **M. Afarin**, R. Gupta, “**Expressway: Prioritizing Edges for Distributed Evaluation of Graph Queries**,” *2023 IEEE International Conference on Big Data*.
- [*MICRO'21*] S. Rahman, **M. Afarin**, N. Abu-Ghazaleh, R. Gupta, “**JetStream: Graph Analytics on Streaming Data with Event-Driven Hardware Accelerator**,” *2021 54th Annual IEEE/ACM International Symposium on Microarchitecture*. (*Acceptance Rate: 21.74%*)
- [*Submitted*] **M. Afarin** et al., “**UVVs: Identifying Unchanged Vertex Values in Evolving Graphs via Intersection-Union Analysis**,” *Proceedings of the 30th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*.
- [*Submitted*] C. Gao, **M. Afarin**, X. Yin, N. Abu-Ghazaleh, R. Gupta, “**Sagas: Temporally Consistent Sampling of Evolving Graphs**,” *2025 58th Annual IEEE/ACM International Symposium on Microarchitecture* (*Contributed Equally with the First Author*).

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## TEACHING EXPERIENCE

- Teaching Assistant, **Compiler Design** (Summer'21/22/23 and Spring'21/22), University of California, Riverside, Department of Computer Science & Engineering, [Prof. Rajiv Gupta](#).
- Teaching Assistant, **System on Chip** (Spring'18) **Testability** (Fall'17) **Advanced VLSI** (Spring'17) **VLSI** (Fall'16), Sharif University of Technology, CE Dep., [Prof. Shaahin Hessabi](#).
- Lab Instructor, **Logic Design Lab**, Sharif University of Technology, Department of Computer Engineering, Summer 2017, [Prof. Siavash Bayat-Sarmadi](#).
- Lab Instructor, **Digital System Design Lab**, Sharif University of Technology, Department of Computer Engineering, Summer 2016, [Prof. Maziar Goudarzi](#).
- Teaching Assistant, **VLSI Design** (Fall'19) **Computer Architecture** (Spring'19/Fall'19) **Digital Electronic** (Spring'19) **Logic Design Lab** (Spring'19) **Digital System Design Lab** (Spring'19), Shahed University, CE Department, [Prof. Naser Mohammadzadeh](#).

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## PROFESSIONAL SERVICES

- **Audio/Video Chair** of the ASPLOS'24 Conference.
  - **Reviewing for Conferences & Journals:** CAL'23, TACO'23, IEEE Transaction on Computers'23, Parallel Comput.'23 & 25.
  - **Talks:** HOPC'23 Conference, Society of Women Engineers (UC Riverside, Winter'24), Tulane University (Winter'25), and Binghamton University (Spring'25).
  - **Artifact Evaluation Committee:** ASPLOS'25, ASPLOS'24, ISCA'24.
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## SKILLS

- **Programming Languages:** C/C++, Python, CUDA, OpenMP, OpenCL, MATLAB.
- **Compiler:** LLVM, LLVM-BOLT, LLVM Machine Outliner, LLVM IR Outliner, and Propeller.
- **Hardware Design:** VHDL, Verilog HDL, SystemC, Xilinx ISE, Altera Quartus, Celoxica Agility Compiler, Synopsys Design Compiler.
- **Simulation Tools:** Multi2Sim, GPGPU-Sim, Mentor Graphics Modelsim, HSPICE, PSPICE, IC Encounter, HSPICE, Cadence SoC Encounter, The Structural Simulation Toolkit.

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## REFERENCES

- Professor Tajana Šimunić Rosing (My Postdoc Supervisor – [Email](#) | [Homepage](#))
- Professor Rajiv Gupta (My Ph.D. Supervisor – [Email](#) | [Homepage](#))
- Professor Nael Abu-Ghazaleh (My Ph.D. Supervisor – [Email](#) | [Homepage](#))
- Professor Shaahin Hessabi (My M.Sc. Supervisor – [Email](#) | [Homepage](#))