**AmirHossein Sojoodi** Resume

Graduate Student and HPC Researcher (Updated: June-2024)

Research Interests

Personal Info

Languages

Computer Skills

References

**Address**

Available on Request

**E-mail**

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**Web**[amirsojoodi.github.io](https://amirsojoodi.github.io)  
[github.com/amirsojoodi](https://github.com/amirsojoodi)

[linkedin.com/in/amirsojoodi](http://www.linkedin.com/in/amirsojoodi)

**Persian** (Native) **English** (Fluent)  
**French** (Basic)

**Dr. A. Afsahi** [ahmad.afsahi@queensu.ca](mailto:ahmad.afsahi@queensu.ca)

**Dr. R. Grant** [ryan.grant@queensu.ca](mailto:ryan.grant@queensu.ca)

**Dr. F. Khunjush** [fkhunjush@shirazu.ac.ir](mailto:fkhunjush@shirazu.ac.ir)

**Dr. P. Witte** [pwitte@microsoft.com](mailto:pwitte@microsoft.com)

**Dr. A. Etemad** [ali.etemad@queensu.ca](mailto:ali.etemad@queensu.ca)

**Dr. Dastghaibi** [dastghaib@shirazu.ac.ir](mailto:dastghaib@shirazu.ac.ir)

**Programming Languages**

C/C++, Java

Python, JavaScript

**Platforms & Tools**

CUDA, OpenMP, MPI,   
UCX, Pthreads, WebGPU

PyTorch, Tensorflow, Apache Ignite, Apache Spark, Apache Tez, Apache Hadoop

Auto Tools, Perf, Valgrind, NVIDIA Nsight Tools,   
Arm DDT, Gdb, Gprof  
  
**Operating Systems**

Ubuntu, Windows

Debian, CentOS, Xen

High Performance Computing, Parallel Computing, Distributed Processing, GPU Computing

Educations

2020-25 **Ph.D.** **In Electrical and Computer Engineering,** *Queen’s University,* Kingston, Canada  
 Research topic: High-performance GPU-Aware Communications; **GPA: 4.0/4.0**

2012-15 **M. Sc.** **In Software Engineering,** *Shiraz University,* Shiraz, Iran.

**Ranked 3rd** among students with **GPA** **17.66/20.00**

Thesis**:** Design & Evaluation of a Large-Scale Data Processing Framework for Modern

GPUs. (Enabling Apache Tez to use GPU) *supervised by**Dr. F. Khunjush*

2007-12 **B. Sc. In Software Engineering,** *Shiraz University,* Shiraz, Iran

Publications ([**Link**](https://scholar.google.com/citations?user=Dr5nIRYAAAAJ) to Google Scholar)

2024 A. Sojoodi, Y. H. Temucin, and A. Afsahi, “Enhancing Intra-Node GPU-to-GPU Performance in MPI + UCX through Multi-Path Communication,” in *Proceedings of the International Workshop on Extreme Heterogeneity Solutions (ExHET)*, pp. 1–6, (**Best Paper Award**)

2022 P. Alizadeh, A. Sojoodi, Y. H. Temucin, and A. Afsahi, “Efficient Process Arrival Pattern Aware Collective Communication for Deep Learning,” In Proceedings of the 29th European MPI Users' Group Meeting (EuroMPI).

2022 Y. H. Temucin, A. Sojoodi, P. Alizadeh, B. W. Kitor, and A. Afsahi, “Accelerating Deep Learning using Interconnect-Aware UCX Communication for MPI Collectives,” IEEE Micro, 2022, pp. 68–76.

2021 Y. H. Temucin, A. Sojoodi, P. Alizadeh, and A. Afsahi, “Efficient Multi-Path NVLink / PCIe-Aware UCX based Collective Communication for Deep Learning,” *Proceedings of* *Hot Interconnects*, 2021, pp. 1–10.

2020 A. Sojoodi, M. Salimi Beni, and F. Khunjush, “Ignite-GPU: a GPU-enabled in-memory computing architecture on clusters,” Journal of Supercomputing, 2020, pp. 1–28.

2020 M. S. Beni, A. Sojoodi and F. Khunjush, "A GPU-Enabled Extension for Apache Ignite to Facilitate Running Genetic Algorithms," 2020 (CADS), Rasht, Iran, 2020, pp. 1-8.

Professional Experiences

2022-Now **GPU Software Engineer**

Part-time; at [*Distributive, Kingston, Ontario, Canada*](https://kingsds.network/)*.*

Challenges: Enabling WebGPU in the Distributive compute network

Achievement: Port LeGendre Pair (length 45) algorithm to WebGPU with +700x speedup

2023-Now **CUDA Developer**

Part-time; at [R.E. Grant Consultants](https://www.linkedin.com/company/regrantconsultants/), Kingston, Ontario, Canada.   
 Challenges: Design and development of a CUDA microbenchmark for Rockport Networks   
 (CERIO) systems.

2022-Sum **Research Intern**

Part-time; at [*Microsoft Research*](https://www.microsoft.com/en-us/research/) *(MSR), Seattle, Washington, United States (Remote)*

Achievement: Enable GPU in DistDL framework utilizing CuPy

2018-19 **R&D, XenServer and Linux administrator**

Part-time; at *HPC group,* *CSE Dept, Shiraz University; supervised by Dr. F. Khunjush.* Challenges: To setup and maintain Apache Hadoop, Spark, Tez and Ignite clusters.

2016-17**Servers administrator, Data Visualization and Java backend developer**

Related Talks & Seminars

* 2023, **Workshop on Documentation** at Book Club Group, Kingston Canada
* 2022, **LeGendre Pairs Optimization**, at Distributive Book Club, Kingston
* 2022, **Introduction to GPUs,** at Distributive Book Club, Kingston
* 2019, **Start a Good Career** at CSE Dept Shiraz University
* 2016, **Software Engineering** at CSE Dept Shiraz University
* 2014, **Time Management** as Keynote Speaker at 8th *Break Time in University* Conference
* 2014, **Future Education** as Keynote Speaker at1st *Entekhab-e-Bartar* Conference
* 2011, **Art of Googling** at CSE Dept Shiraz University
* 2011, **Compilers & Interpreters** at CSE Dept Shiraz University

Some Volunteer Activities

* 2023, **PhD Representative** at Queen’s University Graduate ECE Student Council (GECE)
* 2023, **Panelist** at Queen’s University, Global Education Conference
* 2021-22, **Podcast Host and Editor** at [International Voices](https://podcast.cfrc.ca/international-voices-at-queens/) at Queen’s Podcast, produced by [QUIC](http://quic.queensu.ca/) and [SASS](http://sass.queensu.ca/)
* 2017-2019, **Photo & Video Editor** at Chashnak Bakery ([Instagram](https://instagram.com/parisarahmani)) as photographer & image/video editor
* 2009-2019, **Staff Committee** at Break Time in University ([BTIU](http://www.btiu.ir)) which is a 3-day conference held by undergraduate and graduate students annually since 2006 for high school students.
* 2012-2016, **Co-founder and member**of Tolu group in which we held seminars and talks about psychology, psychoanalysis, philosophy, history, and sociology
* 2011-2014, **President of** Students’ Scientific Group**,** CSE Dept, Shiraz University**,** in 2011 and its active member during 2009-2012 and 2014

Full-time; at [*Aria Hamrah Samaneh*](http://aryahamrah.com/), *Shiraz Section, Software Group, Shiraz, Iran.* Challenges: Data warehouse research and develop, data visualization with Tableau

2015-16**R&D, Business Intelligence (BI) Developer**

Full-time; at ICTC (Information and Communication Technology Center), Shiraz University

2013-15**R&D, XenServer and Linux administrator**

Part-time; at *HPC group,* *CSE Dept, Shiraz University; supervised by Dr. F. Khunjush.* Challenges: User management, setup and maintain various services such as, nexus repository manager, apt cacher, squid firewall, version control system, etc.

Awards and Accomplishments

2020 **Parya Scholarship,** provided by [Parya Trillium Foundation Scholarship](http://paryascholarship.com/)

2019 **Best T.A** at CSE, Shiraz University. According to the students’ poll, GPU Programming

2016 **9th Place** at National IoT Hackathon, IUST, Tehran, Iran**.** Introducing “*Intelligent Outlet”*

2015 **Silver** **Medal** at 7th National [JavaChallenge](http://javachallenge.ir), Sharif University, Tehran, Iran.

2010**5th Place** at Kashan University 2nd International Programming contest, Kashan, Iran.

Teaching Experiences

2023**Introduction to Algorithms** T.A.**,** Undergraduate; Queen’s University

2020-23**Digital Systems Engineering** T.A.**,** Undergraduate; Queen’s University (4 times)

2020,21,22**Fundamentals of Information Structure** T.A.**,** Undergraduate; Queen’s University

2016**Introduction to OOP with Java** Course Instructor**;** Shiraz University

2014**Multicore Programming** T.A.**,** Graduate; Shiraz University

2013,15,18**GPU Programming** T.A.**,** Undergraduate; Shiraz University

2012,13**Software Engineering Lab** Course Instructor**,** Undergraduate; Shiraz University

2012**Microprocessors** T.A.**,** Undergraduate; Shiraz University

2010,11,12**Operating Systems** T.A.**,** Undergraduate; Shiraz University

2010**Principles of Programming (C)** T.A.**,** Undergraduate; Shiraz University

2009,10,12**System Programming (Assembly)** T.A.**,** Undergraduate; Shiraz University

Other Related Education (SELECTED)

2023-03 GTC Conference, by NVIDIA

2022-08 **NVIDIA Deep Learning Institute (DLI) Certificates**:   
1. Fundamentals of Accelerated Computing with CUDA Python,   
2. Fundamentals of Deep Learning, and   
3. Accelerating CUDA C++ Applications with Concurrent Streams

2021-11 Super Computing (SC) Conference

2021-08 SCINET Summer Workshop: **Debugging and Performance Tuning**

2021-08 Hot Interconnect Conference

2021-07 PUMPS+AI Conference by Barcelona Supercomputing Center

2021-06 SHARCNET HPC Summer Workshop: **Modern C++ and Parallel Programming**

2014-11NVIDIA & Udacity Course**: Intro to Parallel Programming with GPUs**