Sepehr Jalalian

https://sepehrjln.github.io
sepehr.jalalian.dev@gmail.com
LinkedIn: sepehr-jln
github.com/sepehrDV2

Education

University of British Columbia Sept 2021–Apr 2024
M.A.Sc. in Electrical and Computer Engineering

- Thesis: "Flexible Application-directed Virtual Memory Management for Data-intensive Applications and Heterogeneous Hardware"
- Supervisor: Prof. Alexandra Fedorova

Sharif University of Technology Sept 2016–Feb 2021
B.Sc. in Electrical Engineering, Digital Systems Major

- Thesis: "GPGPU accelerated kPC algorithm for causal inference in non-linear settings", supervised by Dr. Matin Hashemi

Allameh Helli High School 2012 –2016

Professional Experiences

Graduate Research Assistant Sept 2021 - present
Systopia Lab, University of British Columbia

- Software systems researcher, interested in operating systems, distributed systems and networking
- Led a collaborative research project and published a paper in ATC, a top-tier systems conference.
- Designed and implemented a scalable paging system utilizing upcalls and asynchronous IO, achieving over 75% performance improvement compared to native Linux.
- Under supervision of Prof. Alexandra Fedorova

Software Developer Intern Feb 2023 - Aug 2023
Oracle Labs, Canada

- Worked on GraalOS project, a high performance serverless Java-based application deployment technology
- Ported Linux Test Project (LTP) framework to the serverless system, effectively importing +1000 verification tests and detecting +100 bugs and vulnerabilities in the virtualization layer of GraalOS.

Undergraduate Research Assistant Fall 2019 - Spring 2021
Laboratory of Learning and Intelligent Systems, Sharif University

- Designed distributed PC algorithm for inference of non-linear causal graphs using kernel methods of machine learning on GPU.
- Implementation done in CUDA. Showed scalability and accuracy on gene expression datasets with various characteristics.
- Under supervision of Dr. Hashemi and Dr. Salehkaleybar

Computer Engineering Intern Summer 2019
Amin Nanosystems Center, Tehran, Iran

- Worked on connecting AVR microcontrollers to a main server via Ethernet for data acquisition.

Research Intern *Fall 2018 - Spring 2019*
Laboratory of Learning and Intelligent Systems, Sharif University

- Implemented and verified Wavelet transform and LSTM neural networks on Raspberry pi(C++) and Android wearable devices(Java) for real-time cardiac monitoring.
- Under supervision of Dr. Hashemi

Publications

- "ExtMem: Enabling Application-Aware virtual memory management in user space", accepted to USENIX ATC'24. **Sepehr Jalalian**, Shaurya Patel, Milad Rezaei Hajidehi, Margo Seltzer, Alexandra Fedorova

Selected Courses

Operating Systems	A+	Advanced Computer Architecture	A+
Systems Security	A	Data Management	A+
Algorithms & Data Structures	19.2/20	Parallel Programming	18.9/20
Distributed Systems	18.8/20	Data Networks	18/20
Machine Learning	18.6/20	Discrete Mathematics	19.6/20

Skills

- **Programming Languages:** C†, C++†, Python*, Java*, Assembly
- **Parallel Programming:** CUDA†, OpenMP*
- **Hardware Design:** Verilog HDL
- **Virtualization:** QEMU, KVM, VirtualBox
- **System Profiling:** eBPF, Perf
- **Others:** SQL, GDB, Git, LATEX, MATLAB, bash

* Basic Knowledge

† Proficient

Selective Course Projects

- Analysis of feasibility and problems of using OS virtual memory system as a database buffer manager, *Data Management*
- Implementation of main OS functionalities for a BSD-like operating system(C), *Operating Systems*
- Implementation of a peer-to-peer decentralized file sharing network(Python). *Data Networks*
- Implementation of WiFi IEEE802.11a physical layer on Xilinx Spartan6 FPGA. *FPGA/ASIC system design*
- Simple bidding/tender app with UI and database. *Python Lab*
- Implementation of accelerated k-means clustering algorithm(using CUDA) on NVIDIA GPUs. *Parallel Processing*
- Implementation of a pipelined MIPS microprocessor in Verilog, *Comp Arch*