Mohsen Gavahi

Looking for full-time Software Engineer position

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Education

2017 to Spring 2023
- **Ph.D. student** Computer Science, Florida State University, Tallahassee, FL, USA
  - Expected graduation: **Spring 2023** (GPA: 3.72/4)

2010 to 2012
- **M.Sc.** Computer Architecture, Sharif University, Tehran, Iran

2004 to 2009
- **B.Sc.** Computer Hardware Engineering, Shahid Beheshti University, Tehran, Iran

Experiences

- **Research Assistant, Enhancing Data and Communication Security in HPC Clusters, FSU, FL**

Aug. 2022 to present
- Optimize encrypted communication over MPI, using OCB cryptographic scheme.
  - Comparing GCM scheme, I accelerated encryption rate up to 4 times using Intel® AVX extensin.

Mar. 2021 to Sep. 2022
- Evaluate encryption performance of container platforms (Swarm and Kubernetes).
  - Applying various CNIs (Calico,Antrea, …) to measure their encryption rates on HPC clusters.

Sep. 2017 to Oct. 2021
- Developing optimized versions of MVAPICH & MPICH with encrypted communication.
  - My focus was on collective operations (Allreduce, Allgather, Bcast, Scatter, Gather) by designing and implementing new algorithms to incorporate cryptographic schemes (BoringSSL, OpenSSL, Libsodium, CryptoPP) with minimum overhead.
  - https://github.com/FSU-CS-EXPLORER-LAB/CryptMPI_2022

Mar. 2013 to Sep. 2017
- **Senior Software Developer, Parallel Processing, IPM, Iran**
  - Scientific Module implementations using GPU and Multicore Programming by CUDA language

Research Interests

- High Performance Computing (MPICH,MVAPICH,OpenMP)
- Virtualization & Cloud Computing (Docker, Kubernetes)
- Parallel & Distributed Systems
- GPU and Multicore Programming

Skills

C	★★★★★
C++	★★★★☆
Python	★★★★☆
CUDA	★★★★☆

Selected Publications

2021
- **Encrypted All-reduce on Multi-core Clusters** (First author)
  - IEEE International Performance Computing and Communications (IPCCC)

2021
- **Efficient Algorithms for Encrypted All-gather Operation**
  - 35th IEEE International Parallel & Distributed Processing Symposium (IPDPS)

2019
- **An Empirical Study of Cryptographic Libraries for MPI Communications** (Second author)
  - 21st IEEE International Conference on Cluster Computing

2015
- **High performance GPU implementation of k-NN based on Mahalanobis distance** (First author)
  - IEEE International Symposium on Computer Sci. and Software Eng. (CSSE)

Programming Honors

2015
- Ranked 2nd of 13th Memocode Hardware/Software co-design International contest
  - memocode.irisa.fr/2015/designcontest.html

2014
- Ranked 1st of 12th Memocode Hardware/Software co-design International contest
  - memocode.irisa.fr/2014/