

Nazanin Beheshti

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#San Jose, CA, P. O. Box: 95132

Personal Profile

- Actively looking for Full time position for Jan 2022

Summary of Qualifications

- Dedicated and self-motivated individual with a great background in hardware system, distributed network, High Performance Computing (HPC), Compiler, and Parallel Programming.
- Extensive experience in writing, debugging, and optimizing Python, CUDA, OpenMP, and MPI programs. Performance and power optimization by using parallel programming and efficient mapping on the hardware for intensive computational problems.

Research Interests

- Artificial Intelligence, High Performance Computing, Parallel Programming, Hardware Engineering, Computer Architecture, Compiler Engineering

Education

Ph.D. Computer Science, University of Houston, Texas, January 2017 to present

GPA: 3.75/4

Bachelor of Science, Electrical Engineering, Sharif University of Technology, Tehran, Iran, 2014

GPA: 3.2/4

Research Experience

Research Assistant, Computer Science, University of Houston

Jan 2017 - Present

Advisor: Prof. Lennart Johnsson

Expected Graduation Date: December 2021

Research Intern at Samsung Strategy and Innovation Center

June 2020 – Dec 2020

Optimizing Deep Learning training on a HPC cluster efficiently and quickly by employing data parallel and model parallel techniques on very large datasets.

ML Research Intern at Cerebras Systems

May 2021 – Aug 2021

Publication

- Unal Sakoglu, Lohit Bhupati, **Nazanin Beheshti**, Nikolaos Tsekos, Lennart Johnsson, “An Adaptive Space-Filling Curve Trajectory for Ordering 3D Datasets to 1D: Application to Brain Magnetic Resonance Imaging Data for Classification”, **International Conference in Computational Science, (2020)**
- **Nazanin Beheshti**, Lennart Johnsson, “Squeeze U-Net: A Memory and Energy Efficient Image Segmentation Network”, **Computer Vision and Pattern Recognition Workshops (2020)**
- **Nazanin Beheshti**, Lennart Johnsson, “Using CNN for AD Classification based on Spatial Correlation of BOLD Signals during Observation” **Under Review.**

Technical Skills

- **Programming languages:** Python, C++, C, CUDA, Intel 8086 assembly language
- **Technical Software:** OpenMP, MPI, TensorFlow, Docker, Singularity
- **Cloud Platforms:** AWS, Google Cloud, Microsoft Azure
- **Operating Systems:** Windows, Linux, Mac OSX

Notable Projects

- **Branch Predictor**
 - Implementing a Pentium M dynamic branch predictor in C++ to find branch outcome prediction based on global predictor and bimodal predictor
- **Aho-Corasick algorithm in GPU**
 - Implementing pattern matching operation on GPU by utilizing high degree of on-chip parallelism
- **Cache Coherence Protocol**
 - Verifying Futurebus and Cache Coherence protocol, working in the Murphi model-checking framework.
- **Round-Robin Scheduler**
 - Simulating execution of a stream of interactive processes according to a round-robin policy in C++.
- **Matrix Multiply**
 - Created optimized version of classic matrix multiplication algorithm
 - Used compiler and hardware specific enhancements to speed up calculations
 - Created multithreaded version of the multiply
- **GPU Project**
 - Used CUDA to implement a matrix multiplication function
 - Used concepts related to tiling, coalesced memory access, shared memory.
- **MPI project**
 - Implemented a multi-threaded and multi-process particle 2D particle simulation based on Newtonian mechanics
 - Optimized load sharing using process and thread communication run on multi-node cluster
- **Meta-CDN**
 - Implementing a meta-CDN in python using AWS, Microsoft Azure, and Google Cloud services
- **Genetic Algorithm in Images**
 - Applying Genetic Algorithms in Image processing to evolve a target image
- **Compiler Construction for a programming language called Demo**
 - Writing scanner and parser in Flex and Bison for Demo language
 - Generating an Intermediate Language Representation (ILOP) for Demo Language
 - Writing an optimizer Intermediate Language Representation for Demo Language

• Notable Courses

- Advanced Computer Architecture (2017)
- High Performance Computing (2017)
- Computer Networks (2017)
- Parallel Computations (2018)
- Machine Learning (2018)
- Compiler Construction (Rice University) (2019)
- Advanced Numerical Analysis (2019)
- Convex optimization (2019)
- Introduction to deep learning (Fall 2019)