Spencer Hance

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Availability: May - August 2018

Education

Northeastern University — **Boston, MA**
Bachelor of Science, ***Computer Engineering*** — *December 2018*

- IEEE (**Treasurer Fall'16, Fall'17**)
- Beta Gamma Epsilon Engineering Fraternity (**Vice President Fall'17**)

Relevant Coursework

- High Performance Computing (**C, PThreads, OpenMP, OpenMPI, CUDA**), Software Security, Networks, Computer Systems (**C, x86**), Algorithms (**C++**), Digital Logic Design (**Verilog, FPGA, MIPS**), Embedded Design (**C, FPGA**)

Work Experience

Advanced Micro Devices (AMD) (Research) — **Boxborough, MA**
Research Co-op - CPU Architecture — *January 2018 – Present*

- Researching cache prefetching methodologies for HPC/Exascale workloads
- Profiled HPC applications with dynamic instrumentation to discover new cache metrics

MIT Lincoln Laboratory — **Cambridge, MA**
Technical Assistant - Machine Learning — *October 2017 – Present*

- Implementing and documenting Machine Learning pipelines **(Python, Anaconda, SLURM)**

Advanced Micro Devices (AMD) — **Boxborough, MA**
Engineer Co-op - GPU Architecture — *January – July 2017*

- Researched new GPU compressed cache designs and presented work at internal innovation expo
- Co-developed cache simulator (**C++**) and decreased simulator runtime by 300%
- Designed simulation framework (**Bash, Python**) to run and analyze large-scale experiments on LSF cluster

EnerNOC — **Boston, MA**
Performance Engineering Co-op — *January – December 2016*

- Created automated tests to measure web-application performance **(JMeter, LoadRunner, Jenkins, AWS)**
- Ported a proprietary algorithm at company hackathon to **Python/OpenCL** and gained a 7x speedup
- Developed a **MEAN.js/JavaScript** application to generate and load test data from Hadoop cluster
- Developed a custom status page and **Splunk** dashboards to display critical performance data on the office wall

Research Experience

International Supercomputing Competitions (SC'15, SC'16, ISC'17, SC'17) — **Boston, MA**
Student Competitor — *July 2015 – Present*

- Designed/built four supercomputers and optimized scientific applications for them
- Competition record of the HPCG benchmark at ISC'17 in Frankfurt, Germany
- Won the "MacGyver Award" for sourcing and building a HPC cluster in 6 hours at SC'16 due to shipping issues

NU Computer Architecture Research Group — **Boston, MA**
Undergraduate Researcher — *October 2014 – Present*

- Ported over 15,000 lines of **C** to **C++** for **open-source** Multi2Sim CPU-GPU simulator
- Developed unit tests with Google Test and discovered/fixed bug affecting the accuracy of all emulations
- Designed a tool **(Bash, Python, SQLite3)** to run many parallel simulations on a SLURM cluster

Technical Skills

Languages: Python (Pandas), C(++), Bash

Technologies: Linux, HPC Concepts, LaTeX, Git, Perforce, GDB, LSF, Splunk, JMeter