

# Spencer Hance

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Availability: May - August 2018

## Education

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### 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

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### 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

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### 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

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

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