

Benjamin D. Killeen

benjamindkilleen.com

killeen@jhu.edu

(314) 651-6809

EDUCATION

- Johns Hopkins University** Baltimore, MD
 - *Ph.D. in Computer Science* Expected: 2024
- University of Chicago** Chicago, IL
 - *Bachelors in Computer Science with Honors* June 2019
 - Minor in Physics* GPA: 3.806

EXPERIENCE

- University of Chicago** Chicago, IL
 - *Instructional Assistant* January 2019 - June 2019
 - **Teaching Assistant:** Instructed students in practical and theoretical machine learning methods, driven by Python and Tensorflow. Wrote supplementary course material and assisted with grading assignments.
 - **Grader:** Provided constructive feedback and quantitative grades for Scientific Visualization and Intro to Comp. Sci. I & II. Augmented classroom instruction via Piazza.
- Epic Systems** Madison, WI
 - *Software Development Intern* June 2018 - August 2018
 - **Predictive Modeling:** Developed custom machine learning functionality to SlicerDicer, a web-based tool enabling clinicians to investigate health data.
- IBM Research - Almaden** San Jose, CA
 - *Research Intern* June 2017 - September 2017
 - **Systolic Data Flow of CNNs:** Developed algorithms for systolic data flow of Convolutional Neural Networks with analog-memory-based deep learning. Simulated forward propagation time and estimated a speedup over state-of-the-art GPUs by two orders of magnitude.
- University of Chicago** Chicago, IL
 - *Research Assistant* June 2016 - March 2017
 - **Cosmic Rays:** Analyzed the Fermi LAT database for possible gamma ray events from Jupiter's Great Red Spot. Concluded the GRS emits no significant gamma rays above 20 MeV.

PATENTS AND PUBLICATIONS

- Burr, Geoffrey and **Killeen, Benjamin**. Efficient Processing Convolutional Neural Network Layers using Analog-Memory-Based Hardware. Provisional U.S. Patent filed October 12, 2018.
- Ambrogio, S., Narayanan, P., Tsai, H., Shelby, R., Boybat, I., Nolfi, C.D., Sidler, S., Giordano, M., Bodini, M., Farinha, N., **Killeen, B.**, Cheng, C., Jaoudi, Y., and Burr, G. "Equivalent-Accuracy Accelerated Neural Network Training using Analog Memory." *Nature* 558:60 - 67 (2018).

SKILLS

Python • Tensorflow • C • C# • MatLab • JavaScript • LaTeX • Haskell • Emacs
Communication Skills • Scientific Writing • Experimental Design • Neural Networks

PROJECTS

- **Artifice:** High precision object detection in scientific images, driven by Deep Neural Networks, available at github.com/benjamindkilleen/artifice .
- **Creative Writing:** Science fiction novel detailing Martians' return to a long-abandoned Earth.

COURSEWORK

Unsupervised Learning and Data Analysis • Computer Vision • Networks and Distributed Systems
Operating Systems • Machine Learning on Big Data • Honors Combinatorics • Programming Languages
Scientific Visualization • Honors Algorithms • Honors Discrete Math • Computer Systems
Quantum Mechanics • Classical Mechanics • Electronics • Electricity and Magnetism • Statistics