Austin Ebel

homepage: abe2122@github.io ♂ email: abe2122@columbia.edu ♂

EDUCATION

Columbia University

2015-2020

Bachelors of Science, Electrical Engineering

New York, NY

GPA: 3.85/4.00

College of William and Mary Bachelors of Science, Computer Science 2015-2020

Williamsburg, VA

GPA: 3.89/4.00

PUBLIC-ATIONS

Gardner, J., Hunt, K., Ebel, A., Rose, E., Zylich, S., Jensen, B., Wise, K., Siochi, E., Sauti, G. Machines as Craftsmen: Localized Parameter Setting Optimization for Fused Filament Fabrication 3D Printing. Advanced Materials Technologies, 2019

RESEARCH EXPERIENCE

 $VLSI\ Lab,\ Columbia\ University$

2021

Supervisor: Mingoo Seok

• This work will explore hardware architectures for machine learning - either related to *TinyML* or *hardware security*.

Research Assistant, Columbia University

2020-2021

Supervisor: Debasis Mitra

- Used deep reinforcement learning to more accurately model optimal investments in information security.
 - Publication in progress.

NASA Langley Research Center

2018

Supervisors: John Gardner, Godfrey Sauti

- Created an end-to-end tool for integrating machine learning into the 3D printing process. Resulting prints show increased quality over prints that use only global parameters.
 - Published paper.

RELEVANT PROJECTS

Full-Custom 8-Bit Microprocessor Design ♂

• Designed a fully custom 8-bit microprocessor core in Cadence Virtuoso using IBM's 90nm technology.

Parallelization of Particle Swarm Optimization ♂

• Reduced the runtime complexity of Particle Swarm Optimization (PSO) by making use of parallel computing techniques on GPUs. Optimal use of shared memory, block size, and data transfer techniques were investigated.

Pipelined RISC-V CPU (in progress) 로

• Working through Berkeley's *EECS151 Introduction to Digital Design and Integrated Circuits* FPGA labs and final project.

ADDITIONAL
EXPERIENCE

NASA Jet Propulsion Laboratory Supervisor: Stirling Algermissen

• Expanded the scope of automated testing procedures for use in NASA's upcom-

ing SWOT satellite.

NASA Jet Propulsion Laboratory

2019

Supervisor: Mike Gangl

• Developed a cloud-based service to help hydrologists query existing and future

NASA datasets.

PRESENT-ATIONS $Columbia\ University\ Data\ Science\ Institute$

2021

Poster Session, Data Science Day

Attacker-Defender Investment Strategies in Cybersecurity

Columbia University Data Science Institute

2021

Cybersecurity Center Poster Session

Attacker-Defender Investment Strategies in Cybersecurity

AWARDS

3rd Place (\$150), Columbia Masters Design Expo

2019

Parallelization of Particle Swarm Optimization

OTHER

An assortment of other, non-hardware related projects can be found on my

website: abe2122.github.io

TECHNOLOGY SUMMARY

TECHNOLOGY Programming Languages: Python, MATLAB, C++, Verilog

Hardware Tools: Cadence Virtuoso, Calibre, Ultrasim, Xilinx Vivado

Others: Unix, Git, LATEX

2020