Alexander D. **Gotsis**

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Education

Carnegie Mellon University — *Pittsburgh, Pennsylvania*

M.S. in Electrical and Computer Engineering with University Honors (Overall GPA 3.67/4.00) — *May 2020*

B.S. in Electrical and Computer Engineering with University Honors (Overall GPA 3.49/4.00) — *May 2019*

- CIT Dean's List Fall 2015, Spring 2017, and Spring 2018, Senior Leadership Recognition, University Honors

Selected Coursework

Logic Design and Verification	Intro to Computer Architecture	Structure & Design of Digital Systems	Capstone Design
Operating Systems Design & Impl.	Embedded Systems Software Engineering	Advanced Storage Systems	Secure Coding

Experience

VMware — *Palo Alto, California*

Member of Technical Staff 2 - Virtual Machine Monitor Team — *May 2020 - Present*

- Work to devise a new API for vendors to create their own virtual devices. Parse and process PCIe BARs of devices to construct regions.

NVIDIA Corporation — *Santa Clara, California*

GPU RTL Design + Verification Intern - CUDA Unified Virtual Memory Systems Software Intern — *July 2019 - December 2019*

- Improvements to GPU Frontend (FE) design and verification team infrastructure and performance suite from October to December.
- Perform bugfixes and improvements on the Unified Virtual Memory (UVM) Linux kernel module of the CUDA kernel-mode driver and its unit and performance tests. Implement and verify a new cross-platform performance test for the Copy Engine to guide development.

MITRE Corporation — *Bedford, Massachusetts*

Embedded Software Coop/Intern — *May 2018 - August 2018*

- Develop and test a multiple power & clock fault testing suite as Python interfaces for Arbitrary Waveform/Function Generators.
- Profile Dwenguino AVR instructions and develop suite for profiling other hardware implementations.
- Alter programmable logic for secure video game console eCTF to store symmetric keys. Win 2nd place in eCTF and Iron Flag Award.

Robotany — *Pittsburgh, Pennsylvania*

Electrical Engineering Power Systems Intern — *May 2017 - May 2018*

- Design 3-phase delta 240V electrical power system for robotic vertical farm, fixture wiring, and control racks.
- Specify and implement power system including conduits, transformers, and load centers. Manage and direct assembly teams.

Auditory Lab (Profs. Heller and Grover) — *Pittsburgh, Pennsylvania*

Electrical and Computer Engineering Research & Development Engineer — *May 2016 - May 2017*

- Engineer mobile application to assist in teaching echolocation skills to visually impaired persons on an interdisciplinary team.
- Provide back-end design for and administrate data collection server.

Skills & Hobbies

SystemVerilog	FPGAs	ARM	Python	Computer Architecture	Operating Systems	Realtime Embedded	Climbing
UNIX Systems	C / C++	x86	Git	Reverse Engineering	Lab Equipment	Rapid Prototyping	Hiking/Backpacking

Projects & Extracurriculars

- **UNIX-like Kernel from Scratch** Operating Systems Design & Implementation - 15-410 / 605 (Spring 2018)
  Designed & implemented the entirety of a small (14k loc) and robust UNIX-like kernel on x86-32 with a partner over 8 weeks. Some features include kernel-level threads, user-level threads, condition variables, mutexes, readers-writers locks, and virtual memory management.
- **RTL Design/Verification Projects** Logic Design & Verification - 18-341 (Fall 2018), Computer Architecture - 18-447 (Spring 2019)
  Designed & implemented optimized pipelined matrix multiply-accumulate, concurrent "NoC" packet router, and more in SystemVerilog. Implemented a series of increasingly complex RISC-V processors ranging from a single-cycle design to an out-of-order architecture.
- **Embedded Capture the Flag** 2nd Place Team, Iron Flag Award (June 2018 - July 2018)
  Designed a secure video game console with a team part time over 8 weeks. Defended own design & attacked other team's systems.
- **Build 18 Hardware Hackathon** Builder (January 2017)
  During a week-long Hardware Hackathon, designed & implemented a protocol for driving a 96 x 64 RGB LED Matrix via an FPGA in SystemVerilog. Use this display to show programmatically derived 3D animations.
- **Activities Board Technical Committee** Core Member & Executive Board (2015 - Present)
  Direct & implement production services for campus events including 3-phase power systems, rigging, and professional audio & lighting.
- **CMU Explorers Club (CMUX)** Member (2015), Hiking Chair & Treasurer (2016-Present)
  CMUX is an club dedicated to making outdoor activities more accessible. Organize hikes as Hiking Chair. Manage finances as Treasurer.