Tristan A. **Sweeney**

Computer Engineer · Systems & Software

(732) 320-2075 | sweeney.tr@husky.neu.edu | www.tristansweeney.com | sweeneytr

Education

Northeastern University *Boston, Massachusetts*

B.S.& M.S. in Computer Engineering (Concentration in Systems & Software) *Sep. 2014 - May 2019*

- Breadth Courses: Networks & Distributed Systems, Advanced Algorithms, Differential Equations and Linear Algebra, High Performance Computing, VLSI Design, Machine Learning/Pattern Recognition, Applied Probability & Stochastic Processes

Professional Experience

Amazon Robotics *North Reading, Massachusetts*

Firmware Engineer *May 2019 - Present*

- Creates embedded applications, firmware, and drivers compliant to IEC 61508 and IEC 61784 standards
- Trailblazes common app/firmware platform, contributing shared primitives for data-flow, synchronization, and arbitration
- Develops drivers for device configuration and high-bandwidth peripheral I/O (polling, interrupt, and DMA)
- Produces abstraction layers used across projects to minimize project scope and maximize developer productivity
- Contributed to autonomous safety controller processing video streams for certifiably safe collision avoidance
- Developed embedded application for gate control boxes with external interlocks in airline cargo hubs

Cambridge Consultants *Boston, Massachusetts*

Wireless Embedded Software Intern *Jul. 2018 - Dec. 2018*

- Developed firmware for wireless headphones, working with bluetooth in regular, low-energy, and music streaming profiles
- Created and demo'd electromechanical assembly, firmware, and python module for AI-controlled foosball opponent
- Planned, deployed, and administrated GPU backed baremetal kubernetes cluster for machine learning workloads

Amazon Robotics *North Reading, Massachusetts*

Firmware Engineer Intern *Jan. 2017 - Sep. 2017*

- Created C++ user space driver and python module for precise robotic arm control and motion planning
- Developed automated camera calibration fixture controlled with a LabView / TestStand GUI, linear rail and robotic arm
- Developed software to visualize LIDAR video noise, used to improve camera enclosure and identify ambient noise sources
- Created benchmark data for Occupancy Map algorithms, using raycasting to generate synthetic LIDAR data

NVIDIA Corporation *Santa Clara, California*

Compute Architecture Engineer Intern *Jan. 2016 - Sep. 2016*

- Prepared management for meeting with Google to discuss acceleration for Natural Language Processing
- Developed performance modeling infrastructure for deep learning on GPUs and Excel+VBA User Interface
- Researched deep learning architectures and generated GPU performance models

Research Experience

NU Computer Architecture Research Lab *Boston, Massachusetts*

Undergraduate Researcher *Sep. 2014 - May 2019*

- Researched coprocessor (GPU) accelerated computing

Supercomputing(SC), International Supercomputing(ISC) *Austin; Frankfurt; Salt Lake City; Denver*

Student Cluster Competition System Administrator/Participant *2015 - 2017*

- Enabled 2017 team to place 1st of 12 non-government sponsored teams through effective system configuration
- Developed Ansible system, automating installation of system packages and benchmarks, allowing GPU swap at competition
- Developed a verification system for Graph500 benchmark, validating distributed graph traversal algorithm implementations

Expertise

Programming	C & C++, Python, Rust, ARM-7 Assembly, Bash
Linux	git, CLI and systemd, Ansible, Docker, Kubernetes, HPC Scheduling and Management
Embedded	IEC 61508 compliant firmware, peripheral drivers, RTOS, libC, POSIX & OS implementations
Networking	IEC 61784 compliant safety communication protocols, RAFT consensus protocol, distributed spanning tree protocols