NICHOLAS HURLEY

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EDUCATION

Northeastern University **Boston, MA**
BSc Computer Engineering and Physics | 4.0 GPA *May 2024*
- *Relevant Courses:* Modern Physics, Quantum Mechanics II, Electricity and Magnetism, Thermodynamics and Statistical Mechanics, Astrophysics, Discrete Structures, Embedded Design, Circuits, Networks, Electronics, Linear Systems, Digital Design

EXPERIENCE

Tesla **Palo Alto, CA**
Infotainment Systems Software Intern *July-Dec 2023*
- Improved boot-loading procedure to reduce system startup time by 15 seconds.
- Implemented and tested new kernel-level memory-management parameter to improve page-allocation latency.
- Designed Golang parser for creating comprehensive kernel-panic logs.
- Implemented kernel power-button handler to protect eMMC NAND devices upon emergency shutdown.

SEEQC Quantum Computing **Elmsford, NY**
Superconducting Electronics Intern *Jan-April 2023*
- Performed digital error-rate tests for superconducting Josephson junction logic chips operating at 4K.
- Wrote 2 Python testing procedures to identify transmon qubit tuning parameters.
- Designed digitization and error-rate procedures for milliKelvin qubit systems.

CERN Large Hadron Collider Compact Muon Solenoid Detector **Geneva, Switzerland**
Research Assistant *July-Dec 2022*
- Monitored, identified, and addressed errors in Endcap Muon Track Finder.
- Developed a novel method of calibrating detector geometry in Python with 9% efficiency improvement for low-deflection muons.
- Created web-tool for querying and viewing sub-system data trends over time with Flask and JQuery.

Charles Stark Draper Laboratory **Cambridge, MA**
Instrumentation Electronics Co-op *July 2021-May 2022*
- Assembled, tested, and verified five 400 volt waveform generators.
- Designed controller software and GUI for waveform generators in Python.
- Developed bill-of-materials with 20 space-grade components for nano-satellite applications.
- Designed schematics and PCB layouts for space-based power systems and MEMS gyroscope test-boards.

PROJECTS

Phased-Array Speaker System - Northeastern University ECE Capstone Project *Jan-April 2024*
- Designed electrical schematic and PCB layout to individually address and power 32 speakers using 16-TDM DAC and STM32-SAI.
- Developed face-tracking GUI to communicate with STM32 and steer direction of sound-beam using constructive interference.
- Presented and demonstrated the final product to a panel of 10 judges. Awarded third place out of 20 teams.

Nipkow Disc Mechanical TV - Cornerstone of Engineering Final Project *Jan-March 2020*
- Recreated an early 20th century electro-mechanical design for a television with an added video-game engine.
- Programmed microcontroller to interface with IR sensor and LED to create functioning video-game engine and television display.

PUBLICATIONS

Darin Acosta, Emanuela Barberis, Nicholas Hurley, Wei Li, Osvaldo Miguel Colin, Yijie Wang, Darien Wood, Xunwu Zuo: “The Potential of a TeV-Scale Muon-Ion Collider,” 2022, JINST 18 (2023) P09025; arXiv:2203.06258.

SKILLS AND PROFICIENCIES

Software:

Python
MATLAB
Mathematica
C embedded programming
Linux
Git
BASH
Excel

Hardware:

Miniature IC soldering
PCB part replacement
PCB layout
Multimeters
Oscilloscopes
LTSpice
Schematic design
Verilog FPGA