JACK LEIGHTCAP

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EDUCATION

Northeastern University Boston, MA — August 2018 - May 2022

BSCompE Computer Engineering · Mathematics and Computer Science, minors · *GPA*: 3.9
Dean's List all semesters · Lawrence Award, highest GPA in year (physics department)

Microprocessor-based Design*	EECE	4534	Digital Design and Computer Organization*	EECE	2322
Computer Systems	CS	3650	Special Topics: Hardware and System Security*	EECE	5640
Embedded Design	EECE	2160	Circuits and Signals	EECE	2150
Fundamentals of Networks	EECE	2540	Fundamentals of Electronics*	EECE	2520

* - *ongoing*

Cambridge University Cambridge, United Kingdom — Summer 2019

Pembroke-King's Summer Programme: Young Global Leaders Scholarship · Northeastern GEO Grant

Abington Heights High School Clarks Summit, PA — 2014 - 2018

High School Diploma, *GPA*: 4.0
Mathematics Award · AP Scholar with Distinction · PLTW+AP Award · Symphony, Chamber, Honors Orchestra

PROJECTS

Classical Scores Project — 2017 - Present

- Request-based YouTube channel dedicated to sharing scores and recordings of obscure or underappreciated classical music. Grew channel to 4 million total views and 12 thousand subscribers.
- Automation of video editing with ongoing project *ScrollingScore* - automation of image processing with Python, and video production with FFmpeg shell script frontend.
- Engraving of manuscripts in Lilypond, a TEX-derived music typesetting language.

Cimulink — Embedded Design, Fall 2019

- Boolean Algebra expression reducer written in C.
- Parses Boolean Algebra S-Expression into Abstract Syntax Tree, and reduces expressions using a given set of axioms.
- Implemented instantaneous evaluation on Xilinx Zynq-7000 SoC with system I/O, where input is given by switches, and output is represented on LEDs.

MBTA Green Line Speedrun — March 2019

- Used brute-force Travelling Salesman algorithm to determine the shortest possible path which visits all stops of the MBTA Green Line. Executed path with a personal best time of 3:15.

hmalloc — Computer Systems, Fall 2019

- A thread-safe bucket-based memory allocator written in C, designed to be faster in common use than the C standard library `malloc`.
- Optimization of data structures, asymptotic complexity, and thread-safety mechanisms.

LaTeX Transcriptions — 2018 - Present

- All notes taken in lecture are transcribed into LaTeX for personal clarity and as a teaching aide for classmates.
- Highly refined workflow to bring transcription rate close to handwriting rate with vim and shell scripting.
- Expanded into popular `.tex` templates for note taking, homework submissions, and labs.

SKILLS

Software

- Proficient: GNU/Linux, LaTeX, git, shell scripting, Makefiles
- Familiar: PSpice, EAGLE, SolidWorks, AutoCAD

Programming

- Proficient: Python, C, C++, Java, Racket
- Familiar: Go, AMD64 Assembly, MATLAB, Wolfram Mathematica

Miscellaneous

Classical Piano, Viola, Origami mathematics and tessellations, Electronics, Art History