

JACK LEIGHTCAP

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EDUCATION

Northeastern University Boston, MA

August 2018 - May 2022

Bachelor of Science in Computer Engineering · Mathematics and Computer Science, minors · *GPA*: 3.9

Dean's List all semesters · Lawrence Award, highest GPA in year (physics department)

Relevant Courses:

Microprocessor-based Design, Digital Design and Computer Organization, Computer Systems, Hardware and System Security, Fundamentals of Networks, Fundamentals of Electronics

Cambridge University Cambridge, United Kingdom

Summer 2019

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

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.

EXPERIENCE

Research Assistant, NUCAR

Spring 2020

Research Assistant in Northeastern University Computer Architecture Research lab. Work on RISC-V simulator syscall design.

E-Board, Wireless Club

Spring 2020

Ham Apprentice in Northeastern Wireless Club. Lead Ham radio licensing study session, and become familiar with club's radio equipment.

Project Lead for airdights, an LED strip interface in club space using Arduino and Raspberry Pi Flask framework.

Design of PCB with aid of senior club members.

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, music typesetting, origami, bread making, electronics, art history