

# Raphael Long

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## EDUCATION

### University of Illinois at Urbana Champaign

B.S. in Computer Science

May 2021

4.00/4.00 GPA

### Relevant Coursework

System Programming, Computer Architecture, Data Structures, Discrete Structures, Software Design Studio

## EXPERIENCE

### Course Assistant

CS 126 Software Design Studio

Champaign, IL

Sept. 2018 - Present

- Hosted office hours and code reviews, taught design principles and test driven development
- Provided feedback and graded students on code readability and structure
- Mentored students on industry best practices, including code style and version control

### Machine Learning Research (with Phil Long)

Palo Alto, CA

May 2018 - Present

- Improved best lower bound on halflines error, reducing gap between bounds by 15%
- Working towards matching bounds by constructing adversarial probability distributions
- Studied lower and upper bound on  $\text{opt}(2)$ , the two sample case

### Software Engineering Intern

Capital One

Champaign, IL

Jan. 2018 - May 2018

- Restructured SQL database for faster queries, decreasing queries on home page by 88%
- Built data visualization tools for internal use using Angular 5
- Migrated legacy code to utilize new internal tools and styles

### GNU Linux User Group

Champaign, IL

Sept. 2017 - Present

- Discussed current events in Linux and the open source community
- Organized group purchase of hardware

## PROJECTS

### Facial Recognition

Apr. 2018 - May 2018

- Used C++ OpenCV to detect, recognize, and label faces from a webcam in real time

### Procedurally Generated Game Engine

Jan 2018 - Feb. 2018

- Constructed framework in Java that pulls descriptive text from JSON files to build world
- Designed engine to support game saves and enable easy additions to game logic

### Schedule Optimizer

Sept. 2017 - Dec. 2017

- Generates schedules for students, resolving conflicts and minimizing gaps between classes
- Created production pipeline and algorithm using Node.js and MongoDB

### PygHack Hackathon Participant

Sept. 2017 - Sept. 2017

- Built app to alert police of illegal parking, especially in handicap spots
- Implemented MongoDB database, back-end API and simple front-end data visualization tool

### Wireless Interference Research (with Minnie Ho)

Sept. 2016 - May 2017

- Used MatLab to model propagation of noise in wireless systems
- Analyzed different methods of transmitting data (BPSK, QPSK, etc)

## SKILLS

Proficient in Java, Python (numpy, pandas), C++, C, Git, UNIX, Javascript (Node, Angular), HTML and CSS

Experienced with MatLab, SQL, MongoDB and Lua