# Mahmudul Rapi

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Portfolio: mahmudulrapi.netlify.app

## Education

**Princeton University,** Princeton, NJ 09/2020 - Present

*B.S.E in Electrical & Computer Engineering, Expected Graduation Date: May 2024*
GPA: 3.95/4.00
Minor: Applications of Computing (CS), Statistics & Machine Learning
Relevant Coursework: Data Structures & Algorithms, Systems Programming, Logic Design, Machine Learning, Discrete Math, Introductory Java Programming

## Experience

**Princeton University Computer Science Department** - Course Grader 09/2021 - Present
- Grading 10 students programming assignments weekly for the Data Structures and Algorithms course taught at Princeton.
- Evaluating programming assignments for code correctness, efficiency, and style.

**Khan's Tutorial** - 8th Grade Instructor 11/2020 - Present
- Teaching 8th grade mathematics and writing to prepare students for the New York State Common Core examination and improving students' performance at school.
- Helped all eight of my students to achieve a perfect 4/4 on the Common Core Math exam.

**Centers for Disease Control and Prevention** - Data and Program Evaluation Intern 06/2021-08/2021
- Extracted data from CDC career program selection reports for reporting the effectiveness of current selection measures and strengthening future selection.
- Generated visuals, graphs, tables using Excel for the first draft of the Selection Report.

**Princeton University Office of Information Technology** - Closed Captions Editor 09/2020-05/2021
- Closed captioned over 200 videos posted on Princeton's Media Central Website to ensure correct readability, which was 20% more accurate than machine captioning.
- Worked on external website census project to manually identify and remove hundreds of Princeton affiliated website links which were old and non-functioning.

## Activities

**Princeton High Powered Rocketry** - Electrical Subteam Lead 09/2020 - Present
- Leading the design of the electrical components placed in an L1 rocket payload and implementing sensors to track altitude, temperature, and pressure of our rocket in flight.
- Taught the team the basics of Python programming, circuits, Raspberry Pi, and Arduino.

## Projects

**My Portfolio Website** (HTML, CSS, Javascript): My personal website contains information about me, my resume, projects, socials, and contact information. Deployed at https://mahmudulrapi.netlify.app/
**Princeton University Computer (PUnC)** (Verilog): Programmed a 16-bit processor that implements the LC3 instruction set. This processor is Turing complete and is a full-fledged stored program computer.
**Symbol Table** (C): Implemented a symbol table, a fundamental key-value pair data structure, with a linked list implementation and resizing hash table (more efficient) implementation.
**Power Electronics Library** (Java): My own power electronics library containing various power electronic topologies (diode-rectifier, buck converter, boost converter, flyback converter). User-interactive to ask for circuit parameters, and computes the output current and voltage along with other design considerations.
**Seam Carving** (Java): Implemented seam carving, which is a content-aware image resizing technique where the image is reduced in size by one pixel of height (or width) at a time. The project implements dynamic programming and backtracking to find the seam of pixels which can be removed while preserving content.

## Programming Languages

Java, C, Python, HTML, CSS, Javascript, Git/Github, R/RStudio, Verilog, Microsoft Excel