

# Mahmudul Rapi

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Portfolio: [mahmudulrapi.netlify.app](https://mahmudulrapi.netlify.app)

## Education

**Princeton University**, Princeton, NJ

09/2020 – Present

*B.S.E in Electrical & Computer Engineering, Expected Graduation Date: May 2024*

GPA: 3.93/4.00

Minor: Applications of Computing (CS), Statistics & Machine Learning

Relevant Coursework: Data Structures & Algorithms, Systems Programming, Logic Design, Introductory Java Programming, Power Electronics, Electronic Circuit Design

## Experience

**Princeton University Computer Science Department** – Course Grader

09/2021 – Present

- Grading students programming assignments for COS226, 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.
- Grading students' classwork and diagnostic exams to give feedback and track progress.

**Centers for Disease Control and Prevention** – Data and Program Evaluation Intern

06/2021–08/2021

- Generated visuals, graphs, tables using Excel for first draft of the Division's Selection Report.
- Worked on a content inventory and cataloging all contents on Science Office SharePoint website for improving user experience and UX design.

**Princeton University Office of Information Technology** – Closed Captions Editor

09/2020–05/2021

- Closed captioned videos (content such as lectures, talks, guest speeches) posted on Princeton's Media Central website to ensure correct readability.
- Worked on external website census project to manually identify and sort out hundreds of Princeton affiliated website links which were old and non-functioning.

## Projects

**My Portfolio Website** (HTML, CSS, Javascript): My personal website is programmed in HTML, CSS, Javascript, Bootstrap and Node.js packages. It 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