

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: 3.93/4.00

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.

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.
- Teaching team the basics of Python programming, Raspberry Pi, Arduino, PCB design.

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