

# Hamza Bin Yusuff

hamza-yusuff.github.io | hbyusuff@uwaterloo.ca | in/hamza-yusuff | github.com/hamza-yusuff

## Technical Skills

---

**Languages:** Python, JavaScript, C, C++, Racket, SQL, HTML, CSS

**Frameworks:** Django, Django REST, FastAPI, React, Node.js, Selenium, p5.js, Bootstrap, Material UI

**Technologies:** Git, Bash, Heroku, Firebase, Figma, Digital Ocean, Docker

## Work Experience

---

### Chittagong Grammar School

Chittagong, Bangladesh

Software Engineering Intern

Aug – Dec '20

- Worked in a team of two to build a Social Media Web App for the school staff with react.js and firebase.
- Designed an efficient database schema which reduced CRUD AJAX calls by **50%** saving **\$6000** annually.
- Developed a quantifiable **reward-based** algorithm to increase **online resource sharing** among the staff.
- Wrote python script using smtplib to **automate** user registration and email sending to 500 staff members.

### Chittagong Medical College Hospital Cancer Department

Chittagong, Bangladesh

Software Engineering Intern

Apr – Jul '20

- Built a Patient Database Management System web app with Django, and a CRUD API with Django REST.
- Web app initiated the **digitization** of **patient data** in the department, and reduced **data loss** by **20%**.
- Used django-rest-auth and django-cors-headers package for token authentication and CORS, respectively.
- Deployed the REST API in Digital Ocean by configuring an **Ubuntu 18.04** server instance with Gunicorn.
- Setup **Nginx** in-front of **Gunicorn** to leverage its high-performance connection handling mechanism.

## PROJECTS

---

### Enigma

- Developed an **async** (HTTPS) REST API using **FastAPI**, that exposes several cryptosystems, including **AES**, **SHA 256/512**, **RSA**, **Vigenere**, **Caesar**, and **prime** (supports > 128 bits) generation algorithms.
- Implemented the RSA Cipher, and leveraged **pynacl** and **pycryptodome** libraries for other cryptosystems.
- Developed an equivalent python library with 18 cryptographic methods, and uploaded the library to PyPI.
- Deployed the API, and wrote a comprehensive documentation of the API's 18 endpoints on GitHub.

### Lisp-ython

- Implementation of a light-weight interpreter and transpiler written in python for **Lisp** and **Racket**.
- Transpiles mathematical operations, cons, list, variable declaration in **Racket** to **equivalent python code**.
- Interpreter supports user-defined procedures, lambda calculus, conditionals and primitive data structures.

### Turing

- Built a team chat app using React Hooks, React Router Dom, Firestore and Material UI, that allows **encryption/decryption** of the visible chat on screen using AES (Enigma API) and Caesar Cipher.

### Algorithma

- Designed and developed a blog which host **visualizations** of computational algorithms in an aesthetic UI.
- Implemented visualizations of **Perlin noise**, **Maurer Rose**, **Timestable** and the mandelbrot set using p5.js.

## AWARDS

---

- **Country Highest in Cambridge O-Level Computer Science**
- **Bronze in the regional round of National High School Programming Contest (2019)**

## EDUCATION

---

University of Waterloo

Bachelors of Computer Science, *Dean's Honours List, Fall 2020*

Sept '20 – Apr '25 (expected)