Gabriel Thompson

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Relevant Skills

Programming/Markup Languages: Python, Java, JS, HTML, CSS, Processing, Markdown, LaTeX, Sonic Pi
Misc. Tools/Frameworks: React.js, Next.js, Flask, SQL, Mongo, Git/GitHub, Bootstrap, Tailwind, Google Firebase, NumPy

Education

2023 - now **University of Toronto** (BS, Computer Science) *(GPA: 3.94/4.00)*
Relevant Coursework: Foundations of Computer Science, Software Development, Calculus, Linear Algebra

2019 - 2023 **Stuyvesant High School**
Relevant Coursework: Software Development, Computer Graphics, APCS, AP Calculus BC

Experience

Web Developer & General Council – University of Toronto CS Student Union May 2024 - present

- Co-built **Next.js**-based website for **400+** students at Fall 2024 orientation and other CSSU events. which users can scan QR codes (updated every 15 seconds) at orientation booths to log their attendance.
- Wrote protocol for generating and validating QR codes using **HMAC encryption**, built **API** for sending QR codes from server to client. Built **Tailwind** frontend for website for orientation leaders and students, backend in **PostgreSQL**.
- Re-designing hackathon GenAI Genesis's site with **Next.js**, **Firebase** and **Tailwind.css** (for use by **300+** attendees).

Software Engineering Intern – Snorkle Labs May 2024 - Aug 2024

- Built **Python** pipeline to match natural language body part names to **4,000+** mesh IDs in **10+** GLB medical models.
- Wrote script to pre-process medical models, assigning codes from the FMA ontology to each mesh ID. Created matching algorithm, which works by finding FMA code of body part name, then **recursively** searching children and ancestors of that code using OLS4 API to finds a mesh ID with a matching FMA code.
- Built **React** & **Bootstrap**-based feature for users to generate anatomical presentations with **GPT-4** and view them. Includes ability to edit & save presentations to user account via **AWS Lambda** function accessing **DynamoDB** table.

SWE Mentee — Google Mentorship Program Feb 2023 - Jun 2023

- Led team to create DAFTER-GPT, a **JS**-based **Chrome extension** and **Python**-based tool for training an **LLM** to write emails in my writing style, given a corpus of my past emails. Advised by Google Software Engineer.
- Created **Python** data pipeline to fine-tune **GPT-3** model on a corpus of **500+** emails and generate new emails given new prompts. Model trained via the **OpenAI API**. Link to project source code
- Presented final project to **10+** Google NYC employees. Received positive feedback on project from program director.

IT Director — Stuyvesant Writing Center May 2022 - Jun 2023

- Built and deployed full-stack website to manage school's Writing Center for **3,300+** students and **50+** editors across all four grades. Website built in **Python**, **Flask**, **SQL**, and **JS**, deployed via **DigitalOcean**. Link to project
- Developed user authentication system for **300+** accounts, editor feedback system, and email notification system to send **2,000+** emails to **500+** email addresses. Oversaw **24/7** deployment of website for **8,000+** hours.

Other Personal Projects

- **Personal Blog** – Wrote 6,500+ words on CS & math-related topics, including SHA-256 and 12 tone-equal temperament
- **PawPoints** - Web app to track the locations of nearby stray cats and when they were last fed. Won 1st place out of 54 teams at NewHacks 2023. Back-end written with **Google Firebase** and **SvelteKit**, front-end written with **Tailwind**.
- **MIDI Harmonizer** - A **Python** tool for auto-tuning vocals to multi-voice MIDI arrangements using the **PSOLA** algorithm. Built with **Librosa**, **NumPy**, and **Jupyter Notebook**.
- **Layover Calculator** – Web app that uses data from the Yelp and **Google Maps API** to generate suggestions for activities during flight layovers. Back-end in **Python**, **Flask**, **SQL**, front-end in **Bootstrap**, **JavaScript**, & **Jinja**

Honours & Awards

- 1st place at NewHacks 2023 (out of 54 teams). My team was awarded $600. Project link
- 2nd place at StuyHacks 2021 (out of ∼20 teams). Project link