TOMMY HE

Seeking an opportunity to hone my critical thinking and leadership in the modern tech workplace

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EDUCATION

McGill University   Sept. 2020 - May 2023 (Expected)

Joint Honors Math and Computer Science (B.Sc.)

Major GPA: 3.93

EXTRACURRICULAR PROJECTS

TikTok Dance Trainer   Jan. 2021

McHacks hackathon: "Achievement Unlocked:" the most fun and creative game dev hack

- Outputs live feedback for the similarlity between the user's dance and a target dance
- Express backend with HTML/CSS frontend; TensorFlow PoseNet to identify poses with custom similarity metric

Virtual Learning Toolbox   Sept. 2020

HackMIT hackathon Top 8

- A toolbox for improved online learning including a virtual whiteboard, gesture detection, and automatic verbal comparison
- OpenCV/TensorFlow CNN for whiteboard and gesture; GloVe embeddings for paragraph similarity

Musical Transcription & Encryption/Decryption   Feb. 2020

MIT Blueprint hackathon Advanced Division 3rd place

- Musical transcription with an encryption scheme based on specific pieces with automatic decoder
- Pyaudio/fast fourier transform/lilypond for transcription; decryption based on markov chain monte carlo

Chess GUI & AI bot   2019

- Fully functioning chess GUI interface with LAN playability and an AI bot
- tkiner/PIL for GUI; web sockets/threading for LAN play; AI trained with minimax and pruning

Chatting While Compiling   2021

- Web app that allows users to chat in private room with live code sharing and compilation
- Express/Socket.IO for backend and HTML/CSS frontend; docker containers used for code sanitation

Simple File System   2021

Final Project for COMP310: Operating Systems

- Implemented a file system in linux using I Nodes with directories in C that supports the normal file operations
- Incorporated with the FUSE wrapper to allow usability in the user space

EXPERIENCES

Hack4Impact   Sept. 2021-

MADA's MEALS À PARTAGER

- Web and mobile application to help elderly or disabled people in Montreal receive nutrious ready-made meals
- Collaborated with a team of 8 developers over 2 semesters, using Git for version control, to create a polished product
- Worked with flask in conjunction with PostgreSQL and unit testing in backend

Isogeny Cryptography   Dec. 2021-

- Research project with Prof. Crepeau regarding isogeny based cryptography and its usefulness in a post-quantum world
- Experimented on its practicality and applied uses with python

NOTABLE CLASSES

- COMP252: **H. Data Structures & Algos** Covered Big O, graphs/trees/network flow, algos like Ford-Fulkerson
- COMP362: **H. Algorithm Design** Algos without efficient solutions like linear programming, randomized algorithms
- COMP551: **Applied Machine Learning** Applied algorithms in ML like random forest, NN, regression
- COMP547: **Cryptography & Data Security** Theory of classical/modern cryptosystems

SKILLS

Languages

Python | Java | C++ | C | SQL | HTML | Javascript | CSS | Shell | OCaml

Libraries/Frameworks

Express.js | React.js | Flask.py | Socket.IO | PyTorch | Bootstrap | Tensorflow | Numpy | Pandas | Matplotlib

Spoken Languages

English ●●●●●
Mandarin ●●●●●
Spanish ●●●◐○○