

## EDUCATION

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- **Upper Canada College** Toronto, Canada  
*Ontario Secondary School Diploma and International Baccalaureate Diploma* *Sept. 2019 – present*
  - **GPA:** 4.0
  - **Awards:** Principal's List (top 10% of class); Thompson Prize in Computer Science; Gold Community Service Tie (200 hours)

## EXPERIENCES & ACHIEVEMENTS

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- **CTF Competitions** Toronto, ON  
*Participant* *Sept 2019 - Present*
  - **picoCTF 2019:** 1177<sup>th</sup>/58998 in the top 2% globally
  - **redpwnCTF 2020:** 15<sup>th</sup> in the highschool division globally individually
  - **picoCTF 2020:** 17<sup>th</sup>/6215 in the top 1% globally; 5<sup>th</sup> nationally (Canada); 8077 Individual points
  - **picoCTF 2022:** 15<sup>th</sup>/7794 in the top 1% globally; 3<sup>rd</sup> nationally (Canada); 8200 Individual points
- **Competitive Programming** Toronto, ON  
*Participant* *Sept 2019 - Present*
  - **United States of America Computing Olympiad:** Silver Level
  - **Canadian Computing Competition:** Top 25% nationally
- **Leadership Positions** Toronto, ON  
*Head* *Sept 2019 - Present*
  - **Head of Coding Club:** Organized after-school and weekend club meetings and work sessions; Lead the cybersecurity sector of the club, teach, lead, compete and research on cybersecurity topics; Contribute to club development by leading project demonstrations and competition preparation sessions
  - **Head of Mechatronics Club:** Team leader and primary driver of 9651S VEX Robotics Team; Host weekly meetings and participate in development and research in mechatronics and engineering; Support junior robotics team through course presentations and practice.
  - **Head of Technology & Conference Chair of the World Affairs Conference:** Created and maintained the official web application; Handle all technological logistics such as registration, live event hosting and networking; Manage post-conference certificate issuing and attendee retention.
  - **Head & Sponsor of VA3UCC Amateur Radio Club:** Achieved the highest radio certification in Canada (Advanced Certification) with call sign VA3JFO; Active researcher and participant in radio engineering projects; Founder and Sponsor of VA3UCC Amateur Radio Club.
  - **Chief of Technology at The Blue and White Publication:** Manage and contribute to the STEM related publications; Lead the team on organizations technology development in official website management, online SEO and security.
  - **Team Leader of 0x41 & Sq4dr0n CTF Team:** Lead team to compete in CTF competitions with focus in binary exploitation, cryptography, web exploitation solving and writeups; Manage team recruitment and education for junior team members
- **Summer Experiences** Toronto, ON  
*Participant* *Summer 2021*
  - **SHAD Canada:** SHAD is Canada's most prestigious STEM summer program; Month long program with innovation, engineering and technology; Created a grey water recycling system demonstration using AVR micro-controllers
  - **Waterloo QCSYS:** Rigorous enrichment program focused on Quantum Computing and Quantum Cryptography; Month long lectures and lab experiments for high school students to carry out quantum research
- **Research** Toronto, ON  
*Participant* *Summer 2021*
  - **The Internet of Things Networks Research Paper:** Worked with Dr. Fahad Dogar from TUFTS University focused on Major Security Challenges, Solutions and Future Research Opportunities; IEEE pending manuscript submission

- **Hacking 3D Printers:** Research on printable edible filaments for 3D printers such as Cream, Chocolate, Pancake Batter etc. and their firmware designs
- **Coppersmith-Winograd Matrix Multiplication and CNN:** Research on fast matrix multiplication implementations and it's effect on IoT devices when training Convolutional Neural Networks through timing and power analysis

## • Hackathons

Toronto, ON

### • Participant

Sept 2019 - Present

- **BLG Blockchain Hackathon 2020:** Lead team to create *Diamonde*, a blockchain based ethical diamond tracking system
- **SPRINT Hacking Education Challenge 2020:** Lead team to create *Lockd*, a secure mobile phone pouch that encourages productivity in a school environment through cryptocurrency rewards
- **Convergence.tech Digital Inclusion Challenge 2021:** Lead team to create an interactive web application *CollabR*, a collaborative learning and social networking platform for students

## • Other Activities

Toronto, ON

### • Participant

Sept 2019 - Present

- **Electronics Service Club:** Lead initiatives to collect electronic waste; Refurbished used electronics to donate to local schools, libraries and shelters; Provide digital inclusion initiatives and outlets to members of the community
- **Pathways to Education Canada Fundraiser Technology Associate:** Created a DMCA protected online photo gallery with purchasing capabilities to gather funds to donate to charity; Led the marketing and promotion of the online photo exhibition at UCC
- **#TeamSeas Fundraiser UCC Chapter Organizer:** Created the UCC chapter website and design; Designed illustration posters and used NFC tags to streamline donation process

## PROJECTS

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Please to click the hyperlinks to visit my GitHub Profile or School GitHub Profile for further details.

- **Peer4Peer:** <https://peer4peer.ca> is a peer tutoring platform that optimizes student engagement with virtual learning and promotes virtual companionship during a time of uncertainty. The platform uses a LAMP stack deployed using containerized docker clusters.
- **Diamonde:** A blockchain based ethical diamond tracking system. The system allows each process of collecting a diamond to be traced through a private blockchain. Used Node.js React as a frontend framework, Express backend connects to Truffle Suite for Ethereum Blockchain development. Solidity was used for smart contract development.
- **CollabR:** A collaborative learning and social platform for students during the pandemic. Students could join randomized groups of students that share the same interest and socialize using educational challenges that promote learning. The program uses MERN stack and uses Firebase serverless functions and Cloud Firestore.
- **LogX:** LogX is a modern amateur radio logbook for iOS and Android. It provides solid support for logging functionalities as well as social networking through feed, messaging and stories. React Native for iOS and Android development, Firebase functions, realtime database and authentication for backend functionality.
- **Personal Website:** <https://jeffersonding.com> is an expandable personal website and blog. I used Gatsby static site generator and Github Actions+Pages to manage content and hosting.
- **InfoCrypt:** A web platform to manage and analyze cryptocurrency markets. The website vault is secured by a u2f physical security key. React and Node.js were used for this project.
- **World Affairs Conference Website:** The official website for the World Affairs Conference at <https://worldaffairs.ucc.on.ca>. The website is written in React and Firebase functions are used for registration and verification.
- **Donna:** Online registration system for the World Affairs Conference. A MERN stack is used with Firebase serverless functions and Firebase Realtime Database.
- **PloverMaster:** Open source python script that utilizes the GeminiPR protocol to communicate with open source stenography machines for learning and practice.
- **ESPWoL:** A hardware Wake-on-LAN implementation using ESP8266 devices to remotely boot a PC without WoL support
- **SynologyMerge:** Open sources script that streamlines the process of managing and migrating Synology NAS packages
- **IB IATeX Template:** An open source template for IB Internal Assessments, Extended Essays and reports

## PROGRAMMING SKILLS

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- **Languages:** Python, JavaScript (TypeScript), C++, Java, Dart, Swift, Solidity, Bash
- **Tools:** AWS, Vim, GCP/Firebase, GDB, Docker, Wireshark, Burpsuite, Sleuthkit, Metasploit