

# HADY IBRAHIM

+1 (613) 710-6040

✉ hadyib007@gmail.com

📁 Biomedical Projects

🌐 linkedin.com/in/hady-ibrahim/

🐙 github.com/itshady

## HIGHLIGHT OF QUALIFICATIONS

- Looking for Software Developer Internships Summer 2024 (May 1, 2024 - August 30th, 2024)
- Showcased leadership while **leading high-impact projects at Shopify**, coupled with a track record of successfully leading, managing and delivering complex academic projects both independently and as a team
- As part of **McMaster Formula Electric Embedded Software Team**, currently leading the design of a hardware in the loop (HIL) tester, focused on simulating the car on a test bench. This also enables the team to perform data logging during drive testing and the ability to replay the run via simulation.

## EDUCATION

### McMaster University

09/2021 – 04/2026

Bachelor of Engineering, 3rd year Software and Biomedical Engineering CO-OP, CGPA - 12.0/12.0

- Awards: Provost's Honour List (x2), The McMaster University Award of Excellence, iBiomed Showcase for IBEHS 2P03
- Classes: Data Structures and Algorithms, Software Architecture, Discrete Math I & II, Computer Architecture

### West Carleton Secondary School

09/2018 – 06/2021

- Awards: Valedictorian, Principal's Leadership Award, Student's Choice Award

## TECHNICAL SKILLS & TOOLS

**Languages/Technologies:** Java, Ruby, Ruby on Rails, Python, JS, React, React-Native, C, PHP, SQL, Linux, GraphQL, Git, OpenAI API

## WORK EXPERIENCE

### Teaching Assistant, McMaster University

09/2023 – Present

- Courses: IBEHS 1P10 - Health Solutions Design Projects I: Introduction to Engineering Fundamentals and Design, COMPSCI 1MD3 - Introduction to Programming, SFWRENG 2DA4 - Digital Systems and Interfacing

### Software Developer Intern, Shopify

Deploys Team - Ottawa, ON

05/2023 – 08/2023

- **Led a team of 3 full-time developers in a project** to automate enforcement of action item completion, improving service reliability company-wide, which achieved **91% reduction** in overdue tasks within the first month of rollout. The project addressed a critical issue where action items around Shopify, crucial for production readiness and post-incident remediation, were historically neglected until the last minute before high-traffic events, leaving critical post-service disruption work lying on the floor
- Announced project to **3,000+ Engineers** on Workplace and presented the project to an audience of 50 people within my org
- Oversaw Shopify's merge queue and deployment system (CI/CD) maintenance and enhancements. Also integrated an OpenAI chatbot into the platform, utilizing internal document embeddings, to enhance developer productivity through async assistance
- In my extra time, I worked on learning **mobile development**, leading me to tackle features in Shopify's mobile app that affects **3+ million Shopify merchants daily**

Mobile Tooling Team - Ottawa, ON

05/2022 – 08/2022






- Led a full-stack project, introducing a highly-used feature to Shopify's mobile infrastructure deployment system, utilized by **all Shopify mobile developers**
- Initiated a UI migration from React and an Internal CSS framework to Embedded Ruby and Bootstrap on Shopify's mobile infrastructure. Personally migrated **75% of the product's pages**
- Wrote ansible scripts that are used to provision and maintain a fleet of mac minis, which run all mobile infrastructure jobs at Shopify

## PROJECTS

### Island Mesh Generator - An Interactive Island Generator with Extensive Features and User Customization

2023

- Architected a modular software suite in Java, composed of four distinct services. This suite was designed to generate and visualize 2D meshes, further enriched with island generation and interconnected cities, ensuring the suite's extensibility and maintainability. Implemented an irregular mesh generation algorithm using Voronoi Diagrams, Lloyd Relaxation, and Delaunay Triangulation, enhancing the realism and complexity of the generated islands
- Made decisions that conformed to SOLID principles and advocated for them across all the services. For instance, leveraged the Builder design pattern for creating complex island objects and the Singleton pattern for seed reproducibility
- Implemented a pathfinder service that employs **graph algorithms (Dijkstra's and Bellman Ford)** for optimal path calculation between cities. This service incorporated dependency injection to enable seamless algorithm interchangeability

- Slacker, DeltaHacks IX Winner** - A Chore Organization App for Roommates  2023
- Created a web application in 24 hours using React and Firebase to randomly assign chores to roommates
  - Implemented Google authentication so users can login and invite their friends to a "household" via email
  - **Won Best Productivity App** in hackathon (1st out of 60 total submissions)
- Conway's Game Of Life, N Player Game?** - OOP Full-stack Web-App for a Cellular Automation Game  2022
- Built a complete implementation of Conway's Game of Life with a variety of enhanced features
  - Chose a simple problem in order to concentrate on code quality, OOP, testing strategies, UI frameworks
  - Implemented the UI layer in vanilla JS and React to understand the purpose of modern frameworks
- A Breath of Fresh Air** - Using Genetically Engineered Bacteria to Model a Treatment for Lung Cancer  2022
- Developed and analyzed a Mathematical Simbiology model for a novel lung cancer treatment using synthetic biology approaches
  - Investigated cell-to-cell communication via quorum sensing pathways for localized drug release
  - Employed restriction enzyme mapping to insert the genes obtained through PCR into the biological circuit
  - Conducted gel electrophoresis and absorbance assays to validate the genetic circuit
  - Selected to present our findings at the **McMaster iBioMed Showcase**
- Genetic Analysis with R** - Determining Differential Gene Expression and Performing Downstream Analysis 2022
- Developed a modular program in R to determine global differential gene expression between ovarian cancer cell lines
- WCSS Peer Evaluator** - Web-App That Allows Group Members to Equitably Evaluate Each Other  2021
- Used at West Carleton SS by **over 1300 students** in order to get valuable feedback from their peers
  - Developed a UI/UX friendly interface that shows teachers their associated students and projects
- Intellectus.ca** - Academic Web-App Allowing Students to Converse Through a Forums and Access Notes  2020
- Founded and championed this app used by students to support each other academically when working online
  - Developed a clean, creative interface with HTML/CSS/JS/Bootstrap that shows students a library of notes
  - Securely hosted an Apache web-app and a Discourse container behind NGINX on digital ocean using Docker Compose

## EXTRACURRICULARS

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### Embedded Software Engineering Member

McMaster Formula Electric - *McMaster University*

09/2022 – Present

- Developed embedded C library for a **Serial Peripheral Interface (SPI)** accessible on STM32 microcontroller ARM chips
- Developed an **IMU Driver** that interfaces with the SPI library in order to parse acceleration data from an ADXL345
- Developed a library for the car's Controller that distributes low voltage using a self-made State Machine in C with function pointers
- Developed a Python script responsible for parsing **Controller Area Network Database Files (CAN DBCs)** and automatically generating C code using Mako templates

### Software Developer

McMaster Engineering Society - *McMaster University*

06/2023 – Present

- Recreated McMaster Engineering Society website and other peripheral sites, saving \$350 and thousands of printed paper annually

### Physics Youtube Channel

Physics 1D03/1E03 - *McMaster University*

09/2021 – 02/2022

- Creating YouTube videos to help McMaster students better understand difficult physics concepts (**1500+ views**)

### Head Soccer Coach Volunteer

Kanata Dragons Summer Soccer - *Ottawa, ON*

05/2022 – 08/2022

- Energetically organized and conducted weekly soccer coaching sessions for children aged 6-7, driven by my deep-rooted passion for soccer nurtured from my years of playing at the provincial level

### Elected Student Senator (Grade 12) and Grade 11 Representative

West Carleton Secondary School - *Ottawa, ON*

09/2019 – 06/2021

- Represented 1300+ students working with school board trustees, superintendents, student trustees/senators
- Encouraged and led the grade to engage in charity events, leading to 1,000+ donations collected
- Organized a board-wide spirit week event with over 25,000 students
- Organized unique virtual game shows to better students' well-being during COVID-19 allowing for 150+ viewers. The triumph of these virtual events subsequently prompted their introduction to the school-board wide spirit week, reaching 350+ students