



# SOPHIA SHANTHARUPAN

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## EDUCATION

### McMaster University

Hamilton, ON

*Bachelor of Applied Science - Honours Computer Science Co-op*

*Sept 2022 - Apr 2026*

- Courses: Data Structs & Algorithms, Databases, Algorithms & Software Design, Algorithms & Complexity
- McMaster University Dean's Honour List 2023 - 2025

## EXPERIENCE

### Research Assistant II

Oct 2023 - Present

*McMaster University Advancement Services*

*Remote*

- Produced a data report which opened the way to creating in house PowerBI KPI reports in-lieu of using third-party software. This will **reduce department costs by \$30,000 per year** in future budgets.
- **Achieved a 90% reduction in prospect lookup time** by engineering an MS SQL database and PowerBI CRM dashboard with DAX, built from unstructured text data.
- **Decreased manual data verification by 95%** for selecting a prime alumni event hosting location, by engineering a CRM dashboard using Power BI.

### Website Developer

Feb 2022 - June 2022

*Student Project developed for BeeOneSmartie - Online Tutoring Company*

*Vaughan, ON*

- Applied **Agile methodologies** with **JavaScript, HTML** and **CSS** in a five-member team, enhancing the site through 4+ sprints to meet client specifications.
- **Improved accuracy of user's final score by 33%** by utilizing an HTML tag to clear the user's input each time an answer is submitted.
- Resolved a critical error within the project's JavaScript algorithm to allow a new, randomly generated math question to be presented to the user each time the correct answer is submitted.

## PROJECTS

### Language Learning Mobile Game (In Development) | C#, AWS

- **Reduced data entry and processing time by ~95%** by creating a Lambda function to automate new DynamoDB table entries upon batch file upload to an S3 bucket.

### Shape Intersection Detector | Java, JUnit

- Used Object Oriented Principles to develop a Java program to allow the user to instantiate an unlimited number of rectangles, circles, lines and points given their length, radius and/or center, and determine whether any intersect.
- Designed and debugged the results of 60+ JUnit tests to **increase the accuracy of the program by 22%**.

### </> Recipe Book | JavaScript, React, MongoDB, Node.js, Express.js, Joi, Postman

- Utilized Node.js and Express.js to develop 5 CRUD RESTful APIs, and verified their functionality using Postman.
- Established a MongoDB connection to the React web app, allowing users to create and save new recipes.
- Built reusable React components to increase user experience, and implemented React page routing for easy page navigation.

### </> Unix Shell and History Feature | C, Ubuntu

- C program developed on Ubuntu to model a shell that supports infinite user command executions using fork() and exec() system calls.
- **Prevented invalid command crashes by 98%** with custom error handling for invalid inputs.
- Optimized execution by enabling the !! operator to re-execute the latest command, decreasing redundant input, and **reducing command re-entry time by up to 85%**.

## TECHNICAL SKILLS

**Languages:** Java, Python, C, C#, C++, SQL, JavaScript, TypeScript, HTML/CSS

**Tools & Frameworks:** Git, Bootstrap, AWS, npm, Express, MonogoDB, Postman, Joi, PowerBI, Unity, MS SQL Server

**Libraries:** React, Node.js, Pandas, NumPy, Matplotlib

**Other Courses:** Operating Systems, Linear Optimization, Computer Networks & Security, Software Testing