

# Hussein Saad

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## EDUCATION

### McMaster University

MSc Computer Science (Supervisor: Dr. Matthew Giamou)

Honours Computer Science, Minor in Mathematics

(Expected) Apr. 2026

Apr. 2024

## RESEARCH INTERESTS

- Non-Euclidean methods in optimization and machine learning.
- Developing geometric frameworks for efficient optimization algorithms.

## PUBLICATIONS

- [1] Ethan Sequeira, *Hussein Saad*, Stephen Kelly, and Matthew Giamou. “Optimal Beacon Placement for Range-Aided Localization.” In: *Conference on Robots and Vision, 2024*.

## RESEARCH EXPERIENCE

### Autonomous Robotics and Convex Optimization Lab

Jan. 2023 – Present

*Research Assistant*

*Hamilton, ON*

- Exploring manifold optimization methods for distance geometric problems in robotics with Dr. Matthew Giamou.

### LIVELab

May 2022 – Aug. 2022

*Research Assistant*

*Hamilton, ON*

- Assisted in developing a research participant management system projected to cut data collection time by **50%**.
- Utilized Vue.js to implement frontend components, facilitating features like email automation and data filtration.
- Architected a REST API for efficient storage and retrieval of participant information from a MySQL database.

## INDUSTRY EXPERIENCE

### Cisco

May 2023 – Dec. 2023

*Software Development Intern*

*Remote*

- Led the migration of virtual devices to a new operating system, boosting virtual network performance by 15%.
- Spearheaded a test automation initiative to ensure safe deployment of software updates to over **30 million routers** worldwide, significantly minimizing the risk of disruption and bolstering system security.
- Engineered a Python solution for virtual NX-OS routers to optimize network traffic analysis, resulting in a 30% reduction in regression testing time.

### Royal Bank of Canada

Jan. 2023 – Apr. 2023

*Software Development Intern*

*Toronto, ON*

- Designed and implemented a scalable Java-based data ingestion pipeline, successfully decoupling a corporate treasury data layer and improving system maintainability.
- Developed and optimized SQL queries to efficiently transfer data between SparkSQL tables, resulting in a **30% reduction** in processing time and enhancing overall performance.
- Created a REST API with Spring Boot to provide seamless integration and control for the data ingestion process, while employing JUnit and Postman to achieve **80% code coverage** in testing.

## PEER REVIEW

- International Conference on Intelligent Robots and Systems (IROS 2024)

## PROJECTS

### Deep Learning for Lung Disease Detection (Capstone) | *Python, PyTorch, Flask, Deep Learning, Computer Vision*

- Worked with 4 students under Dr. Mehdi Moradi to build a lung disease classification and segmentation model.
- Trained a DenseNet model achieving an average AUC of **0.86** across 6 diseases.

## TECHNICAL SKILLS

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**Languages:** Python, MATLAB, Javascript, Java, SQL (MySQL), HTML/CSS, Bash

**Frameworks:** Pytorch, Numpy, Vue.js, Node.js, Express.js, MongoDB, Spring Boot, pyATS, cvxpy

**Developer Tools:** Git, VS Code, Visual Studio, PyCharm, Postman, Eclipse