Hussein Saad

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EDUCATION

McMaster University Hamilton, ON
Honours in Computer Science, Minor in Mathematics *Sep. 2020 – 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 Riemannian 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 **75% code coverage** in testing.
- Authored comprehensive documentation for the entire data pipeline, API, and related processes, boosting team collaboration and expediting onboarding time.

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*
- Working with 4 students under Dr. Mehdi Moradi to build a lung disease classification and segmentation model.
- Exploring Transfer Learning methods for disease **classification**, and a UNet model for localization and X-Ray image **segmentation**.

Technical Skills

Languages: Python, MATLAB, Javascript, Java, SQL (MySQL), HTML/CSS, Bash
Frameworks: Pytorch, Numpy, Vue.js, Node.js, Express.js, MongoDB, Spring Boot, pyATS
Developer Tools: Git, VS Code, Visual Studio, PyCharm, Postman, Eclipse