RAIYANN JACOB

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EDUCATION

University of Toronto, *Bachelor of Applied Science in Engineering Science*   Expected 2026
Honours Student, Dean's List 2023
Major in Machine Learning Engineering, Minor in Robotics/Mechatronics Engineering
Courses: Algorithms and Data Structures, Applied Fundamentals of Deep Learning, Digital and Computer Systems

SKILLS

Languages	Python, Java, JavaScript, C, HTML/CSS, MATLab, SystemVerilog HDL, RISC-V
Frameworks/Libraries	PyTorch, OpenCV, NumPy, Matplotlib, Scikit-learn, Express.js, React.js, Node.js
Tools/Technologies	Git, MongoDB, Postman, AutoCAD, OnShape, VS Code, LaTeX

PROJECTS

DualNet 🔗 | *PyTorch, Deep Learning, Neural Networks*   June 2023 - August 2023

- Predicted house prices by developing a **machine learning** model that simultaneously analyzes images and numerical data, which achieved **32%** percent error, **9%** better than our baseline Multiple Linear Regressions
- Using PyTorch, created a combined **convolutional neural network** and **multilayer perceptron** architecture, with a **M.S.E.** loss function and **Adam** optimizer that analyzed over **15,000** houses
- **Collected** and **processed** data (outlier removal, normalization, data loading) from North American real estate sites using Sheets and NumPy for a 60/20/20% training, validation and testing split

Budget Me! 🔗 | *M.E.R.N., Full Stack Web App, API*   July 2023 - August 2023

- Utilized the **M.E.R.N.** stack to create an engaging, user-friendly **expense tracker** website application that records transactions to reduce personal monthly spending by **$140**
- **Designed** a sleek interface using **React.js** for a satisfactory user experience as well as managed database/server requests with **MongoDB, Express.js** and **Node.js** while testing essential **APIs** using **Postman**.

Seam Carving 🔗 | *C, Data Structures/Algorithms, Dynamic Programming*   March 2023 - April 2023

- Achieved a grade of **100%** on a project implementing an **abstract data type** in **C** that resizes PNG images. Used **dynamic programming** and **lowest cost algorithms** to remove seams for a **30%** narrower photo

EXPERIENCE

Computer Vision & Machine Learning Engineer   July 2023 - Present
University of Toronto Autonomous Rover Team

- With a **team of 6**, developing a pipeline consisting of **3D LiDARs** and **ZED cameras** to serve as the eyes of an autonomous rover competing at the **Intelligent Ground Vehicle Competition** in Michigan
- Using **PyTorch** and **OpenCV**, improving lane line and pothole detection accuracy by **10%** through implementation of 2D image processing algorithms and deep neural networks like **CNN** and **ResNET**

Executive Director of Sponsorships   June 2023 - Present
University of Toronto Robotics Association

- Collaborating with a team of **talented executives** to **lead** one of the **biggest robotics clubs** at the University, fostering innovation in over **130** members by organizing hackathons, workshops and different sub-teams.
- Designed a **sponsorship package** to **build partnerships** with over **10** companies and gain **$1000** in funding

Mathematics & Programming Tutor   May 2023 - Present
Tutorax

- **Enriching** the academic studies of a diverse range of students through support and extra-help in **Calculus, Physics** and **Computer Science**, tailored to the student's needs and personal goals