Laura Madrid

University of Toronto

LinkedIn | https://lauramadrid.ca/ | laura.maldonado@utoronto.ca | GitHub

Skills

- JavaScript | Typescript | HTML | CSS | C | C++ | Assembly | **Swift** | **Python** | **Numpy** | **OpenCV** | React | Gatsby | Contentful | Scrapy
- **RoomPlan** | **YOLOv8** | PostgreSQL | PowerApps | Firebase | AWS | Adobe Creative Suite | Autodesk Sketchbook | Figma | Canva | OOP |
- Frontend | Backend | Mobile | English, Spanish, French – *All professional proficiency or above*

Relevant Courses Taken

- **CSC492:** Computer Science Implementation Project. Computer Vision for Assisted Indoor Rock Climbing. Supervised by L. Zhang
- **CSC490:** Capstone Design Course - Machine Learning for Machine Vision
- **CSC477:** Introduction to Mobile Robotics
- **FAS236:** Design 1
- **CSC420:** Introduction to Image Understanding
- **CSC496:** Introduction to Medical Robotics
- **CSC413:** Neural Networks and Deep Learning
- **CSC311:** Introduction to Machine Learning
- **CSC398:** Current approaches to ethics for Computer Scientists
- **CSC376:** Fundamentals of Robotics
- **IMI400:** Innovation and Entrepreneurship
- **CSC493:** Computer Vision-based Methods for Endoscope Pose Differentiation in the Larynx. Supervised by L. Kahrs
- **CSC392:** Computer Science Implementation Project-Ethical training in Canadian CS departments. Supervised by M. Pawliuk

Relevant Projects

Indoor Rock Climbing Assistance Tool (IRCAT) — **Computer Vision for Assisted Indoor Rock Climbing** — *Mississauga, ON, Canada* — **09/2023 - Current**

- Played a pivotal role as one of three students in the collaborative development of IRCAT, a project overseen by Prof. Lisa Zhang. IRCAT is specifically designed to aid visually impaired rock climbers by offering personalized suggestions through precise pose tracking.
- Utilized **OpenCV** for accurate pose estimation, effectively tracking climbers' body movements in indoor rock climbing scenarios.
- Employed **YOLOv8** for object detection of diverse rock hold shapes & managed **HSV values** for color identification, ensuring classification of climbing routes along the climbing wall.
- Engineered a user-friendly interface for route selection and editing within IRCAT, allowing climbing assistants to manually refine the detected climbing route based on their preferences.

Brain Tumor Classification Model — **Machine Vision Computer Science Implementation Project** — *Mississauga, ON, Canada* — **09/2023 - 12/2023**

- Contributed to a collaborative project on Brain Tumor Classification using Machine Learning, ensuring the model's accuracy for glioma, meningioma, and pituitary tumors to enhance reliability for medical practitioners.
- Participated in the implementation of interpretability methods such as saliency maps and exploring Generative Adversarial Networks (GANs) for model interpretation.

Bedtime Story Completion Model — **Neural Networks & Deep learning Course** — *Mississauga, ON, Canada* — **04/2023 - 04/2023**

- Contributed to the development of two models, a short-story generator, and a title generator, aimed at assisting writers in overcoming writer's block and enhancing the speed of crafting children bedtime stories.
- Played a key role in cleaning and pre-processing the dataset, setting up the LSTM model, and implementing the user interaction module.
- Contributed to debugging the RNN model, establishing conceptual connections with the GPT-2 model, and participated in crafting the project's documentation.

Experience

Software Development Engineering Intern — **Zillow: Rich Media Experiences (RMX) Team** — *Seattle, WA, USA* — **05/2023 - 08/2023**

- Enhanced the capture App using Apple's RoomPlan API for optimized AR room capture.
- Implemented **ARSession relocalization** for adaptable room scans at different times, preventing device strain and enhancing usability.
- Adapted project scope based on **WWDC23 updates**, focusing on optimizing room capture, merging captured rooms into capturedStructures, and performing comparative analysis.
- Generated **2D floor plans** and interactive **3D floorplan USDZ representations** with furniture.
- Produced a comprehensive **16-page analysis investigating RoomPlan**'s strengths, weaknesses, and potential for team applications
- Collaborated with the RMX team, integrating feedback for ongoing refinement.

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Zillow Engineering and Leadership (ZEAL) Intern — Zillow — *Remote* — 06/2022 - 08/2022

Backend Rotation: Rental Revenue Platform Team
- Developed **Java**-based Job Trigger and **parquet Export** for Data team.
- Managed database access, exporting tables to **AWS Datalake**.

Mobile Rotation: Premier Agent iOS Mobile Team
- Parsed data into **JSON** and programmed **UIKit**-based Real Estate agent contact details page

Zillow Yearly Hack-week: RoomPlan Exploration
- Explored RoomPlan iOS library with skilled engineers.
- Used JSON, UIKit to remove furniture from USDX models.
- Achieved 2nd place in People's Choice: Product Features & Business Ideas category.

Frontend Rotation: Constellations Design System Team
- Optimised Constellation Documentation design.
- Implemented **React**, Styled Components, and **HTML/CSS** site search UI.

Software Development Intern — Tiary Inc. — *Toronto, ON, Canada* — 06/2021 - 08/2021

- Revamped web pages (Blog, FAQ, Checkout, Order Tracking) using React, and created a **Python** program for user data cleanup.
- Developed Tiary Studios' info site with **JavaScript**, **Gatsby**, and **GraphQL**.

Product Marketing Management Intern — Microsoft — *Mississauga, ON, Canada* — 07/2019 - 08/2019

- Built a **PowerApps** Inventory Management Platform with a team of 5 individuals, cutting marketing material request time, and presented at **Microsoft's National Annual General Meeting**.
- Gained proficiency in **PowerApps**, **Power BI**, and **Azure** through weekly tasks exploration.

Teaching Assistant Appointments

- **CSC108:** Introduction to Computer Programming (Fall 2021, Fall 2023)
- **CSC148:** Introduction to Computer Science (Winter 2021, Winter 2022)
- **CSC236:** Introduction to the Theory of Computation (Fall 2022)
- **CSC258:** Computer Organization (Winter 2022)
- **CSC398:** Current approaches to ethics for Computer Scientists (Fall 2023)
- **CSC343:** Introduction to Databases (Winter 2023)

- Conducted labs for ~30 students on Assembly, the Processor Model, and Memory.
- Led in-class Python exercises covering OOP, Logic, Syntax, Testing, Refactoring.
- Managed breakout groups of 40 students during online lecture support.
- Provided support during office hours & evaluated assignments and exams.

Extra Curriculars

Website Manager & Designer — Women in Science & Computing (WiSC) UTM — *Mississauga, ON, Canada* — 09/2021 - 05/2022

- Revamped website using **Gatsby**, **Contentful**, **HTML**, **CSS**, and **JavaScript.**
- Collaborated with WiSC executives for user-centric enhancements and future-proofing.

Education

Computer Science Specialist — University of Toronto — *Mississauga, Ontario* — 08/2019 - 05/2024

Honors BSc. Graduating in May 2024.