+1 647 569 7825
madrid.laura@outlook.com

Laura Madrid

github.com/Laura05010
www.lauramadrid.ca
linkedin.com/in/laura-madrid/

Education

University of Toronto — Sep 2019 – Jun 2024
Honours Bachelor of Science in Computer Science - Entrance Scholarship — *Mississauga, Ontario*

Experience

AIRY3D - Core Team — May 2024 – Present
Computer Vision Software Engineering Intern — *Montreal, Quebec*

- Develop an ISP pipeline in **C++** using **OpenCV** to improve image quality by implementing key image processing steps, with ongoing enhancements.
- Enhance raw image processing by collaborating with the optics team, researching existing ISP projects, and leveraging academic papers, aiming to surpass the company's current ISP capabilities.

University of Toronto — Sep 2021 – Apr 2024
Teaching Assistant — *Mississauga, Ontario*

- Assisted teaching in the following courses: Computer Programming, Computer Science, Theory of Computation, Computer Organization, Ethics for Computer Scientists, Databases
- Prepared tutorial material and ran tutorials and office hours to help improve understanding of course material.
- Graded tutorial exercises, midterms, final exams, and supervised evaluations.

Zillow - Rich Media Experiences (RMX) Team — May 2023 – Aug 2023
Software Development Engineering Intern — *Remote*

- Enhanced AR room capture app using Apple's **RoomPlan API**, optimizing capture efficiency and accuracy by implementing **ARSession relocalization** and generating 2D and 3D interactive floor plans with furniture.
- Adapted project scope based on WWDC23 updates, producing a comprehensive 16-page analysis and collaborating with the RMX team for ongoing refinement.

Zillow — Jun 2022 – Aug 2022
Zillow Engineering & Leadership (ZEAL) intern — *Remote*

- **Backend Rotation:** Developed a Java Job Trigger and **parquet Export** for the Rental Revenue Platform Team, enhancing data handling efficiency by streamlining database access and exporting tables to **AWS Datalake**.
- **Mobile Rotation:** Programmed a **UIKit** Real Estate agent contact details page and parsed data into **JSON**, improving user interface functionality and data integration for the Premier Agent iOS Mobile Team
- **Zillow's Yearly Hack-week:** Modified **USDX** models and explored the **RoomPlan API**, contributing our team **winning 2nd place** in the People's Choice: Product Features & Business Ideas category.
- **Frontend Rotation:** Analyzed and redesigned the Constellations documentation platform for an improved user experience, and enhanced the site search UI using **React**, Styled Components, and **HTML/CSS**, boosting navigation efficiency for the Constellations Design System Team.

Tiary Inc. — Jun 2021 – Aug 2021
Software Development Intern — *Toronto, Ontario*

- Revamped web pages (Blog, FAQ, Checkout, Order Tracking) using **React** and developed Tiary Studios' info site with **JavaScript**, **Gatsby**, and **GraphQL**, improving site functionality and user experience

Projects

Endoscope Pose Differentiation in the Larynx Project | *Python, OpenCV, DeepLabCut* — Jan 2024 – Present

- Developing a system to identify larynx landmarks and creating an application for vocal fold analysis to aid a graduate student's 3D reconstruction of the larynx. Utilized **OpenCV**, SciPy, HSV color masks, and trained a **DeepLabCut** model for landmark annotation. Preparing for publication.

Indoor Rock-Climbing Assistance Tool (IRCAT) | *Python, OpenCV, YOLOv8* — Sep 2023 – Present

- Collaborated on creating a system to aid visually impaired climbers throughout their ascent. Utilized **OpenCV** for pose estimation and **YOLOv8** for rock hold detection
- Managed HSV values to classify routes based on color and engineered a user-friendly route configuration interface.
- Contributed to attaining a **$1500 research** grant and will present the project at the 2024 UofT Summer Undergraduate Research Fair.

Brain Tumor Classification Model | *Python, TensorFlow* — Sep 2023 – Dec 2023

- Contributed to developing a model for classifying glioma, meningioma, and pituitary tumors from multi-axis MRIs, enhancing diagnostic accuracy. Improved model robustness through data augmentation and subject segregation.
- Studied interpretability methods, including saliency maps and GANs, to enhance model transparency.
- Achieved **1st place** at the UTMSU Undergraduate Research Symposium for this project.

Bedtime Story Completion Model | *Python, PyTorch, Hugging Face Transformers* — April 2023

- Contributed to the development of a GPT-2 model for story generation and an RNN model for title generation, aiding writers in overcoming writer's block and speeding up bedtime story creation.
- Cleaned and pre-processed datasets, set up models, implemented user interaction modules, and debugged RNN model while integrating conceptual connections with the GPT-2 model. Contributed to project documentation.

Relevant Courses

- Image Understanding
- Machine Learning
- Neural Networks and Deep Learning
- Fundamentals of Robotics
- Mobile Robotics
- Medical Robotics
- Ethics for Computer Scientists
- Computer Vision-based Methods for Endoscope Pose Differentiation in the Larynx

Skills

Fluent: Python, C++, Swift, Deeplabcut, OpenCV, PyTorch, TensorFlow, Agile, Scrum, OOP, Canva

Proficient: YOLO, RoomPlan, React, Gatsby, Contentful, Firebase, AWS, HTML, CSS, Scrapy, PostgreSQL, Figma

Familiar: C, Assembly, JavaScript, Typescript

Languages: Spanish (Native), English (Fluent), French (DELF B1), Italian (Beginner)