

Miguel Saavedra-Ruiz

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EDUCATION

M.Sc. Computer Science

Université de Montréal; GPA: 4.3/4.3

Advisor: Liam Paull

- Scholarship: *Awarded by DIRO and Le ministère de l'Enseignement supérieur du Québec: 4.000 CAD*

Montreal, Canada

Sep 2021 - Ongoing

PGDip. Artificial Intelligence

Universidad Autonoma de Occidente; GPA: 4.9/5.0

Cali, Colombia

Aug 2020 - Jun 2021

B.Eng. Mechatronics Engineering

Universidad Autonoma de Occidente; GPA: 4.7/5.0

Cali, Colombia

Jan 2014 - Apr 2019

Thesis: “Autonomous landing system for an unmanned aerial vehicle on a terrestrial vehicle”

Advisor: Victor Romero-Cano

- Decoration: *Highest GPA of engineering faculty and graduate position number one.*
- Academic Excellence Award: *Covered 100% tuition cost. Nine Academic periods.*
- Academic Excellence Scholarship: *Covered 80% tuition cost for the whole undergraduate program.*

RESEARCH INTEREST

Artificial Intelligence for Robotics Vision, Self-Supervised Representation Learning for Embodied agents, Robot Navigation, Computer vision, SLAM, Graphical Models, Uncertainty Estimation, RL.

EXPERIENCE

Mila - Quebec AI Institute

Masters Candidate - Student Researcher

- Research within the intersection of AI and robotics, Self-Supervised Representation Learning for embodied agents, Learning-based mobile robot navigation and Uncertainty estimation in Deep Learning.

Montreal, Canada

Sep 2021 - Ongoing

Whale & Jaguar

Machine Learning Engineer

- Research and development of Machine Learning algorithms for social media analysis (Natural Language Processing).

Cali, Colombia

Dec 2020 - Jul 2021

AirflyD & Romero Cano Ingeniería

R&D Robotics Software Engineer

- Research and development of a flight stack and vision application for a heavy-cargo hexacopter with internal combustion engines for precision agriculture applications.

Cali, Colombia

Jan 2020 - Sep 2020

CRT Ingeniería S.A.S. & Romero Cano Ingeniería

Lead Developer

- Developed, tested and implemented software solutions for security applications using deep neural networks and computer vision techniques. Some of the achievements where an AI-based license plate recognition system, image-based heat maps for crowd flow estimation and floor segmentation.

Cali, Colombia

Jan 2019 - Dec 2019

- Developed, tested and implemented different projects as member of RAS. Most of the projects were research initiatives of the university and were presented in local conferences.
 - 3D object detector for vehicles using classic Machine Learning
 - Simulation of a landing system for a UAV in Gazebo
 - Teleoperation system for a car-like robot (inverse kinematics)
 - Autonomous landing system for an unmanned aerial vehicle on a terrestrial vehicle
 - Detection and tracking of a landing platform for aerial robotics applications
 - Mapping and localization in indoors with Turtlebot 2

PUBLICATIONS

- [1] **Saavedra-Ruiz, Miguel**, S. Morin, and L. Paull, “Monocular robot navigation with self-supervised pretrained vision transformers”, *In proceeding of the 19th Conference on Robots and Vision (To appear)*, 2022.
- [2] **Saavedra-Ruiz, Miguel**, A. M. Pinto-Vargas, and V. Romero-Cano, “Monocular visual autonomous landing system for quadcopter drones using software in the loop”, *IEEE Aerospace and Electronic Systems Magazine*, vol. 37, no. 5, pp. 2–16, 2022.
- [3] G. A. Salazar-Gomez, **Miguel Saavedra-Ruiz**, and V. Romero-Cano, “High-level camera-lidar fusion for 3d object detection with machine learning”, *LatinX Workshop at CVPR 2021 (Poster Presentation)*, 2022.
- [4] **Ruiz, Miguel Saavedra**, A. M. P. Vargas, and V. R. Cano, “Detection and tracking of a landing platform for aerial robotics applications”, in *2018 IEEE 2nd Colombian Conference on Robotics and Automation (CCRA)*, 2018, pp. 1–6.

RELEVANT COURSES & CERTIFICATES

- **CIFAR DLRL Summer School** July 29, 2022
CIFAR partnered with Amii, Mila & Vector Institute
Deep Learning, Reinforcement Learning, Optimization, Causal Inference and Scaling Laws.
- **ETH Robotics Summer School** July 8, 2022
The RobotX initiative & ETH Zürich.
Control, State Estimation, SLAM, Path planning and Perception + Search and rescue challenge.
- **Reinforcement Learning Specialization** June 21, 2020
University of Alberta & Alberta Machine Intelligence Institute on Coursera.
Policy gradient, TD methods, Actor-Critic, Value and Policy iteration.
- **Self-Driving Cars Specialization** June 5, 2019
University of Toronto on Coursera, a 4-course specialization.
Visual Perception, Math modelling, State Estimation and Motion Planning.

SKILLS

- **Languages:** Python, C++, Matlab, HTML, Shell, \LaTeX
- **Libraries:** OpenCV, PyTorch, Scikit-Learn, OpenAI Gym, ROS, PCL
- **Technologies:** Gazebo, Docker, GitHub

LANGUAGES

- **Spanish:** Mother-tongue
- **English:** Fluent
 - **IELTS Academic:** 7.5 Overall
- **French:** Basic