Miguel Saavedra-Ruiz

Website: mikes96.github.io
GitHub: github.com/MikeS96
LinkedIn: miguel-a-saavedra-ruiz
Email: miguel-angel.saavedra-ruiz@mila.quebec

Education

Ph.D Computer Science — Montreal, Canada
Université de Montréal — Sep 2023 - OnGoing
Advisor: Liam Paull - **Topics**: Robotics, AI and SLAM

- Scholarship: *FRQNT doctoral scholarship in research (B2X)*

M.Sc. Computer Science — Montreal, Canada
Université de Montréal — Sep 2021 - Aug 2023
Advisor: Liam Paull - **GPA**: 4.3/4.3 - **Topics**: AI and Robotics

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

PGDip. Artificial Intelligence — Cali, Colombia
Universidad Autonoma de Occidente — Aug 2020 - Jun 2021
GPA: 4.9/5.0

B.Eng. Mechatronics Engineering — Cali, Colombia
Universidad Autonoma de Occidente — Jan 2014 - Apr 2019
Thesis: "Autonomous landing system for an unmanned aerial vehicle on a terrestrial vehicle"
Advisor: Victor Romero-Cano - **GPA**: 4.9/5.0 - **Topics**: Robotics and Control

- Distinction: *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, state estimation, SLAM, self-supervised representation learning for embodied agents, robot navigation, graphic models, uncertainty estimation.

Publications

Journal Publications

[J1] **M. Saavedra-Ruiz**, 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.

Conference Proceedings

[C1] S. Morin*, **M. Saavedra-Ruiz***, and L. Paull, "One-4-all: Neural potential fields for embodied navigation", in *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2023.

[C2] **M. Saavedra-Ruiz***, S. Morin*, and L. Paull, "Monocular robot navigation with self-supervised pretrained vision transformers", in *2022 19th Conference on Robots and Vision (CRV)*, 2022, pp. 197–204.

[C3] **M. Saavedra-Ruiz**, 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.

Workshops

[W1] G. A. Salazar-Gomez*, **M. 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)*, 2021.

Experience

Mila - Quebec AI Institute — Montreal, Canada
Student Researcher — Sep 2021 - Ongoing

Research within the intersection of AI and robotics, Self-Supervised Representation Learning for embodied agents, Learning-based mobile robot navigation, SLAM and Uncertainty estimation in Deep Learning (See [C1], [C2]).

Whale & Jaguar — Cali, Colombia
Machine Learning Engineer — Dec 2020 - Jul 2021

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

AirflyD & Romero Cano Ingeniería — Cali, Colombia
R&D Robotics Software Engineer — Jan 2020 - Sep 2020

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

CRT Ingeniería S.A.S. & Romero Cano Ingeniería — Cali, Colombia
Lead Developer — Jan 2019 - Dec 2019

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

Universidad Autónoma de Occidente — Cali, Colombia
Member of the student research hotbed in Robotics & Autonomous Systems (RAS) — Jul 2017 - Apr 2019

Developed, tested and implemented different projects as member of RAS. Most of the projects were university research initiatives and were presented at local conferences (see [J1], [W1], [C3]).

Extracurricular Activities

- **Montreal Robotics Summer School** — Jun 2020
  Helped organizing the event's challenge, prepared the SLAM tutorial and helped with the logistics.
- **CS-CAN** — Jun 2020
  Helped as a volunteer in the event with general tasks and logistics.

Skills

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

Languages

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