Miguel Angel Saavedra-Ruiz

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Education

Universidad Autonoma de Occidente — Cali, Colombia
Postgraduate Diploma, Artificial Intelligence — Aug 2020 - Expected Jun 2021

Universidad Autonoma de Occidente — Cali, Colombia
Bachelor in Mechatronics Engineering; GPA: 4.7/5.0; Graduate position number one. — Jan 2014 - Apr 2019
Thesis: "Autonomous landing system for an unmanned aerial vehicle on a terrestrial vehicle"
Academic Excellence Award: Covered 100% tuition cost. Nine Academic periods.
Academic Excellence Scholarship: Covered 80% tuition cost for the whole undergraduate program.

Institución Educativa Técnico Industrial Rafael Navia Varón — Cali, Colombia
Electronics Technician, GPA: 4.8/5.0 — 2011 - 2013
Academic Excellence Scholarship: Covered 100% tuition cost. Two Academic periods.

Research Interest

Artificial Intelligence applied to Robotics, Machine Learning, Reinforcement Learning, Machine Vision, Computer vision, SLAM, Graphical Models.

Experience

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

- 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 where 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 Hotbed of Robotics & Autonomous Systems (RAS) — Jul 2017 - Ongoing

- 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
  - Autonomous landing system for an unmanned aerial vehicle on a terrestrial vehicle
  - Detection and tracking of a landing platform for aerial robotics applications

- Teleoperation system for a car-like robot (inverse kinematics)
- Object detection and recognition using Convolutional Neural Networks
- Mapping and localization in indoors with Turtlebot 2

Publications

[1] M. Saavedra, A. Pinto, and V. Romero, "Monocular visual autonomous landing system for quadcopter drones using software in the loop", in *2020 IEEE Aerospace & Electronics Systems Magazine*, 2020, (Under review).

[2] M. S. 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.

Projects

List of projects developed to learn a new algorithm, computational tool or as a research initiative.

- Visual-based pose estimation in a quad-rotor
  VO and VIO pipelines for pose estimation.
- Reinforcement Learning Specialization Projects
  Semi-gradient and actor-critic algorithms.
- Robotics Software Engineer projects
  SLAM, Navigation and Planning.
- Self-Driving Cars Specialization Projects
  Visual perception, Math modelling, State estimation.

Relevant Courses & Certificates

- **Reinforcement Learning** June 21, 2020
  University of Alberta & Alberta Machine Intelligence Institute on Coursera.
- **Self-Driving Cars** June 5, 2019
  University of Toronto on Coursera, a 4-course specialization.

Skills

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

Languages

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