INGRID NAVARRO

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Robotics Graduate Student at Carnegie Mellon University

EDUCATION

🎓 **M.S. in Robotics** — *Carnegie Mellon University* 📅 Aug 2020 – present

Coursework: Math for Robotics (16-811), Computer Vision (16-720)

🎓 **B.S. in Computer Engineering** — *Tecnológico de Monterrey* 📅 Aug 2014 – May 2019

🎓 **Exchange Student in Computer Engineering** — *École Polytechnique de Montréal* 📅 Aug 2017 – Dec 2017

SERVICE

🔧 **Admissions Committee for the RISS program** — *Carnegie Mellon University* 📅 January 2021

RESEARCH EXPERIENCE

📍 **Graduate Researcher** — *Bot Intelligence Group (BIG) at Carnegie Mellon University* 📅 Aug 2020 – Present

Working on *Embodied AI* tasks that require multi-modal reasoning to complete goals.

📍 **Undergraduate Research Intern** — *Navlab at Carnegie Mellon University* 📅 Jun 2018 – Aug 2018

Worked on semantic segmentation of 3D point clouds from low-end sensors using computer vision and plane-fitting methods.

📍 **Undergraduate Research Intern** — *Navlab at Carnegie Mellon University* 📅 June 2017 – August 2017

Worked on wheelchair detection and tracking in cluttered environments using deep learning-based computer vision methods.

RESEARCH INTERESTS

Robotics   Embodied AI   Reinforcement Learning   Deep Learning   Computer Vision   Planning

WORK EXPERIENCE

💻 **Robotics Software Engineer** — *Stealth Mode Startup* 📅 Jan 2020 – Aug 2020

Designed algorithms and simulations to build collision detection framework for a surgical robot manipulator.

💻 **Computer Vision Engineer** — *X-LAB Protexa R&D* 📅 Nov 2019 – Jul 2020

- **Project 1**: Designed a prototype of a visual inspection system to detect paint defects on vehicles.
- **Project 2**: Designed a prototype of a visual navigation stack for an autonomous mobile robot.

💻 **Computer Vision Intern** — *Carbon Robotics* 📅 Jul 2019 – Sep 2019

Designed a scheme to evaluate the accuracy of a camera calibration system using an motion capture system and plane fitting methods.

RELEVANT PROJECTS

>_ **Reward Learning in Navigation** — *Carnegie Mellon University* 📅 Dec 2020

Final project for 16-811 Math fundamentals for robotics
Implemented Reinforcement Learning algorithms to train agents to navigate in indoor environments.

>_ **Home Service Robot** — *Robotics Software Engineer Udacity Nanodegree* 📅 Apr 2020

Used ROS to simulate a home service robot which uses SLAM and path planning to navigate and move objects from room to room.

>_ **Perception System of Autonomous Boat** — *Tecnológico de Monterrey* 📅 Jan 2018 – May 2019

Final project for IA-95012 Intelligent Systems
Worked on the design of the perception stack for an autonomous boat that had to navigate through multiple obstacle courses.

PUBLICATIONS

📄 Poster Presentations

- Navarro, I. and L. Navarro-Serment (2018). "Real-Time Semantic Segmentation System of Sparse LiDAR Point Clouds using Lightweight CNNs and Recurrent CRF". in: *RISS Working Papers Journal* Vol. 6, pp. 105–111.
- Navarro, I. and L. E. Navarro-Serment (2017). "A Faster RCNN-Based Wheelchair Recognition System". In: *RISS Working Papers Journal* Vol. 5, pp. 125–132.

👥 Conference Proceedings

- Navarro, I., A. Herrera, et al. (2018). "Data Augmentation in Deep Learning-based Obstacle Detection for Autonomous Navigation on Aquatic Surfaces". In: *Advances in Computational Intelligence. 17th Mexican International Conference on Artificial Intelligence, MICAI 2018, Guadalajara, Mexico, Proceedings, Part II.* vol. 11289. Springer International Publishing, pp. 342–353.

CERTIFICATIONS

⚙ Robotics Software Engineer — *Udacity Nanodegree*   📅 Apr 2020

HONORS / AWARDS

🏆 Top student of the Department of Engineering — *Tecnológico de Monterrey*   📅 Apr 2018

🏆 RoboCup Platform Soccer League Competition, 1st place. — *Mexican Robotics Tournament*   📅 May 2018

🏆 Emerging Leaders in the Americas Program (ELAP) Scholarship Recipient — *Government of Canada*   📅 Aug 2017

🏆 Scholarship recipient — *Santander - Tecnológico de Monterrey*   📅 May 2017

🏆 Hackathon MTY, Junior Category, 1st Place — *Major League Hacking*   📅 Mar 2016

SKILLS

C++ Python Pytorch Habitat AI ROS OpenCV VTK Protobuf OpenRAVE Git Bitbucket Jira Ubuntu Windows

LANGUAGES

Spanish French English