

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), Statistical Techniques for Robotics (16-831), Kinematics, Dynamics and Control (16-711)



 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