

INGRID NAVARRO-ANAYA


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PhD Student in Robotics at The Robotics Institute, Carnegie Mellon University

EDUCATION

- Ph.D. in Robotics — *Carnegie Mellon University*  Aug 2022 – Present
- M.S. in Robotics — *Carnegie Mellon University*  Aug 2020 – Aug 2022
- B.S. in Computer Engineering — *Tecnológico de Monterrey (ITESM)*  Aug 2014 – May 2019
- Computer Engineering Exchange Student — *École Polytechnique de Montréal*  Aug 2017 – Dec 2017

RESEARCH INTERESTS

Robotics Machine Learning Intent Prediction Social Navigation Multimodal Embodied Navigation
Reinforcement Learning Imitation Learning

RESEARCH EXPERIENCE

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

Advised by: Jean Oh

Topics:

- Long-horizon social navigation in shared airspace
- Behavior modeling and intent prediction in pedestrian crowds and shared airspace
- Waypoint models for Vision-and-Language Navigation

- Undergraduate Researcher — *Intelligent Systems Lab at Tecnológico de Monterrey*  Jan 2018 – May 2019

Advised by: Leonardo Garrido-Luna

Topic: Obstacle detection and navigation on aquatic surfaces.

- Robotics Institute Summer Scholar (RISS) — *Navlab at Carnegie Mellon University*  Jun 2017, Jun 2018

Advised by: Luis Ernesto Navarro-Serment

Topics:

- Semantic segmentation of 3D point clouds from low-end LiDAR sensors.
- Wheelchair detection in cluttered environments

WORK EXPERIENCE

- Robotics Software Engineer — *Medical Robotics Startup in Stealth Mode*  Jan 2020 – Aug 2020

Advised by: Kamran Shamaei and Alfonso Paltán

Project: Design of a self-collision and environment collision detection system for a robot manipulator used for surgical implants.

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

Projects:

- Design of a prototype visual inspection system for detecting paint defects on vehicles.
- Design of a prototype visual navigation stack for an autonomous mobile robot.

- Computer Vision Intern — *Carbon Robotics*  Jul 2019 – Sep 2019

Advised by: Kamran Shamaei and Alfonso Paltán

Project: Design of a camera calibration evaluation scheme using a motion capture system and plane fitting methods.

SERVICE

- 🔧 Committee member for the [Learn-to-Race](#) workshop at IJCAI 2022 — [Carnegie Mellon University](#) 📅 June 2022
- 🔧 Robotics Institute Summer Scholars (RISS) program mentor — [Carnegie Mellon University](#) 📅 May 2021
- 🔧 Admissions committee member for the RISS program — [Carnegie Mellon University](#) 📅 Jan 2021, Jan 2022

PAST STUDENTS

- 🎓 [Shaunak Halbe](#) — [RISS Scholar, CS Student at College of Engineering Pune](#) 📅 Summer 2021

Topic: Vision-and-Language Navigation

PUBLICATIONS

👤 Journal Articles

- Francis, Jonathan, Nariaki Kitamura, Felix Labelle, Xiaopeng Lu, [Ingrid Navarro](#), and Jean Oh (2022). "[Core Challenges in Embodied Vision-Language Planning](#)". In: *Journal of Artificial Intelligence Research* 74, pp. 459–515.

👤 Conference Papers

- [Ingrid Navarro](#) and Jean Oh (2022). "[Social-PatteRNN: Socially-Aware Trajectory Prediction Guided by Motion Patterns](#)". In: *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, pp. 9859–9864.
- Tatiya, Gyan, Jonathan Francis, Luca Bondi, [Ingrid Navarro](#), Eric Nyberg, Jivko Sinapov, and Jean Oh (2022). "[Knowledge-driven Scene Priors for Semantic Audio-Visual Embodied Navigation](#)". In:
- [Ingrid Navarro](#), Alberto Herrera, Itzel Hernandez, and Leonardo Garrido (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.

👤 Workshop Papers & RISS Publications

- Patrikar, Jay, Joao Dantas, Sourish Ghosh, Parv Kapoor, Ian Higgins, Jasmine J Aloor, [Ingrid Navarro](#), Jimin Sun, Ben Stoler, Milad Hamidi, Brady Moon Rohan Baijal, Jean Oh, and Sebastian Scherer (2022). [Challenges in Close-Proximity Safe and Seamless Operation of Manned and Unmanned Aircraft in Shared Airspace](#).
- Halbe, Shaunak, [Ingrid Navarro](#), and Jean Oh (2021). [Reason & Act: A Modular Approach to Explanation-Driven Agents for Vision-and-Language Navigation](#). RISS Working Papers Journal. Vol. 9, pp. 105–111.
- [Ingrid Navarro](#) and Luis Ernesto Navarro-Serment (2018). [Real-Time Semantic Segmentation System of Sparse LiDAR Point Clouds using Lightweight CNNs and Recurrent CRF](#). RISS Working Papers Journal. Vol. 6, pp. 105–111.
- [Ingrid Navarro](#) and Luis E. Navarro-Serment (2017). [A Faster RCNN-Based Wheelchair Recognition System](#). RISS Working Papers Journal. Vol. 5, pp. 125–132.

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 AND FRAMEWORKS

[Python](#)[C/C++](#)[Pytorch](#)[AI Habitat](#)[ROS](#)[OpenCV](#)[VTK](#)[Protobuf](#)[OpenRAVE](#)[Git](#)[Bitbucket](#)[Jira](#)[Ubuntu](#)

LANGUAGES

[Spanish](#)[French](#)[English](#)