





# 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

- Fields: Robotics Machine Learning
- Topics: 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:

- Social navigation in non-towered airspace
- Intent prediction in dynamic, social environments
- 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 2018 – Aug 2018

Advised by: Luis Ernesto Navarro-Serment

Topic: Semantic segmentation of 3D point clouds from low-end LiDAR sensors.

- 💡 Robotics Institute Summer Scholar (RISS) — *Navlab at Carnegie Mellon University*  June 2017 – August 2017

Advised by: Luis Ernesto Navarro-Serment


Topic: 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.

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## >\_ 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.

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## 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 and 2022

🔧 Admissions committee member for the *RISS* program — *Carnegie Mellon University* 📅 January 2021 and 2022

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## PAST STUDENTS

🎓 *Shaunak Halbe* — *RISS Scholar, CS Student at College of Engineering Pune*

📅 Summer 2021

Topic: Vision-and-Language Navigation

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## 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. DOI: [10.1613/jair.1.13646](https://doi.org/10.1613/jair.1.13646). URL: <https://jair.org/index.php/jair/article/view/13646>.

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### 👤 Conference Papers

- Ingrid Navarro* and Jean Oh (2022). “*Social-PatteRNN: Socially-Aware Trajectory Prediction Guided by Motion Patterns*”. In: *In proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (to appear)*. URL: <https://arxiv.org/pdf/2209.05649.pdf>.
- 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.

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### 👤 *RISS* Publications

- 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.

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## 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

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## SKILLS AND FRAMEWORKS

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

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## LANGUAGES

Spanish French English