INGRID NAVARRO-ANAYA

🔗 **navars.xyz**   ⊙ **github.com/navarrs**   in **linkedin.com/in/ingridnavarroan**

PhD Student in Robotics at The Robotics Institute, Carnegie Mellon University (CMU)

EDUCATION

🤖 Ph.D. in Robotics — *Carnegie Mellon University, USA*   📅 Aug 2022 — Aug 2028

🤖 M.S. in Robotics — *Carnegie Mellon University, USA*   📅 Aug 2020 — Aug 2022

💻 B.S. in Computer Engineering — *Tecnológico de Monterrey, México*   📅 Aug 2014 — May 2019

> ❯ Study Abroad — *École Polytechnique de Montréal, Canada*   📅 Aug 2017 — Dec 2017

RESEARCH EXPERIENCE

💡 Graduate Researcher — *Bot Intelligence Group (BIG), CMU*   📅 Aug 2020 – Present

Advised by: Jean Oh 🔗 and Sebastian Scherer 🔗

Exploring methodologies for improving the robustness of motion prediction and navigation algorithms for autonomous robots in human-centered environments.

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💡 Robotics Institute Summer Scholar (RISS) — *Navigation Laboratory (Navlab), CMU*   📅 Summer 2018

Advised by: Luis Ernesto Navarro-Serment 🔗

Learning-based algorithms for semantic segmentation of sparse 3D point clouds from low-end LiDAR sensors.

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💡 Robotics Institute Summer Scholar (RISS) — *Navigation Lab (Navlab), CMU*   📅 Summer 2017

Advised by: Luis Ernesto Navarro-Serment 🔗

Design of a dataset and deep learning algorithms for wheelchair detection in cluttered environments.

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💡 Undergraduate Researcher — *Autonomous Vehicles Lab (Vanttec), Tecnologico de Monterrey*   📅 Aug 2017 – Aug 2018

Advised by: Leonardo Garrido-Luna 🔗

Learning-based algorithms for obstacle detection and navigation on aquatic surfaces.

SERVICE

🔧 Robotics Institute Summer Scholars (RISS) program mentor — *CMU*   📅 2021, 2023

🔧 Admissions committee member for the RISS program — *CMU*   📅 2021, 2022, 2024

🔧 Chair of Finances for the Latino Graduate Student Association (LGSA) — *CMU*   📅 2023

🔧 Committee member for the Learn-to-Race workshop at IJCAI — *CMU*   📅 2022

PEER REVIEWING

International Conference on Robotics and Automation (ICRA)   International Conference on Intelligent Robots and Systems (IROS)

Human Robot Interaction (HRI)

WORK EXPERIENCE

❯_ Robotics Software Engineer — *Stealth Mode Medical Robotics Startup*   📅 Jan 2020 – Aug 2020

Advised by: Kamran Shamaei 🔗 and Alfonso Paltán

Built and integrated algorithms for collision detection and avoidance for a surgical implant robot manipulator.

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

Design of a dataset and learning-based visual inspection method for detecting and categorizing vehicle paint defects.

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

Advised by: Kamran Shamaei and Alfonso Paltán

Design of a camera calibration evaluation scheme using an OptiTrack motion capture system and plane fitting techniques.

TEACHING

Teaching Assistant, 16-720 Computer Vision — *CMU* 📅 Spring 2023

Instructor: Deva Ramanan 🔗

Teaching Assistant, 16-785 Integrated Intelligence in Robotics: Vision-Language Planning — *CMU* 📅 Spring 2024

Instructor: Jean Oh 🔗

MENTORING

🎓 Pablo Ortega-Kral 🔗 — *RISS Scholar, CMU* 📅 Jun 2023 - Dec 2023

Project: Design of a real-world dataset, method for motion prediction, and evaluation tools for scenario risk analysis in airport surface operations.

🎓 Jong Hoon Park 🔗 — *M.S. Student in Mechanical Engineering, CMU* 📅 Jun 2023 - Aug 2023

Project: Explore self-supervised techniques to improve the adaptability of motion prediction models to unseen environments.

🎓 Shaunak Halbe 🔗 — *RISS Student, CMU* 📅 Jun 2021 - Dec 2021

Project: Designing hierarchical policies for improved interpretability in Vision-and-Language Navigation.

PUBLICATIONS

THESIS

Ingrid Navarro. *Socially-Aware Trajectory Prediction Guided by Motion Patterns.* Carnegie Mellon University. CMU-RI-TR-22-38. (2022) [🔗]

JOURNAL ARTICLES

Jonathan Francis*, Nariaki Kitamura*, Felix Labelle*, Xiaopeng Lu*, **Ingrid Navarro*** and Jean Oh. *Core Challenges in Embodied Vision-Language Planning.* Journal of Artificial Intelligence (JAIR). Vol. 74. (2022) *Equal contribution; alphabetically ordered. [🔗]

Ingrid Navarro*, Jay Patrikar*, Joao P. A. Dantas, Rohan Baijal, Ian Higgins, Sebastian Scherer and Jean Oh. *SoRTS: Learned Tree Search for Long-Horizon Social Robot Navigation.* IEEE Robotics and Automation Letters (RA-L). Vol. 9, Issue 4, pp. 3759-3766. (2024) *Equal contribution. [🔗 | </> | ▶]

PROCEEDINGS

Benjamin Stoler*, **Ingrid Navarro***, Soonmin Hwang, Jonathan Francis and Jean Oh. *SafeShift: Safety-Informed Distribution Shifts for Robust Trajectory Prediction.* In IEEE Intelligent Vehicles Symposium . (To Appear) . (2024) *Equal contribution [🔗 | </>]

Ingrid Navarro and Jean Oh. *Social-PatteRNN: Socially-aware Trajectory Prediction Guided by Motion Patterns.* In IEEE International Conference on Intelligent Robots and Systems (IROS). pp. 9859–9864. (2022) [🔗 | </>]

Ingrid Navarro, Alberto Herrera, Itzel Hernandez and Leonardo Garrido. *Data Augmentation in Deep Learning-based Obstacle Detection for Autonomous Navigation on Aquatic Surfaces.* In 17th Mexican International Conference on Artificial Intelligence, (MICAI). Lecture Notes in Artificial Intelligence. (2018) [🔗 | </>]

WORKSHOP/WORKING PAPERS

Pablo Ortega-Kral, **Ingrid Navarro** and Jean Oh. *Cleared-for-Takeoff: Motion Prediction in Airports using Heterogeneous Map Representations.* Robotics Institute Summer Scholars (RISS). Working Papers Journal, Vol. 11. (2023) [🔗]

Jay Patrikar, Joao Dantas, Sourish Ghosh, Parv Kapoor, Ian Higgins, Jasmine J. Aloor, **Ingrid Navarro**, Jimin Sun, Ben Stoler, Milad Hamidi, Rohan Baijal, Brady Moon, Jean Oh and Sebastian Scherer. *Challenges in Close-Proximity Safe and Seamless Operation of Manned and Unmanned Aircraft in Shared Airspace.* IEEE International Conference on Robotics and Automation (ICRA). Aerial Robotics Workshop. (2022) [🔗]

Shaunak Halbe, **Ingrid Navarro** and Jean Oh. *Reason & Act: A Modular Approach to Explanation-Driven Agents for Vision-and-Language Navigation.* Robotics Institute Summer Scholars (RISS). Working Papers Journal, Vol. 9. (2021) [🔗]

Ingrid Navarro and Luis E. Navarro-Serment. *Real-Time Semantic Segmentation System of Sparse LiDAR Point Clouds using Lightweight CNNs and Recurrent CRF.* Robotics Institute Summer Scholars (RISS). Working Papers Journal, Vol. 6. (2018) [🔗 | </>]

Ingrid Navarro and Luis E. Navarro-Serment. *A Faster RCNN-Based Wheelchair Recognition System.* Robotics Institute Summer Scholars (RISS). Working Papers Journal, Vol. 5. (2017) [🔗]

PRE-PRINTS

Gyan Tatiya, Jonathan Francis, Luca Bondi, **Ingrid Navarro**, Eric Nyberg, Jivko Sinapov, and Jean Oh. *Knowledge-driven Scene Priors for Semantic Audio-Visual Embodied Navigation.* ArXiv. v1. (2022) [🔗]

PRESS

✈ AI Pilot Can Navigate Crowded Airspace — *School of Computer Science, CMU* 🔗   📅 Aug 2022

✈ Move over, autopilot: This AI can avoid other planes — *Popular Science* 🔗   📅 Aug 2022

✈ CMU's AI pilot lands in the news — *Practical AI Podcast* 🔗   📅 Aug 2022

✈ Researchers Develop AI Pilot for Navigating Crowded Airspace — *Avionics International* 🔗   📅 Aug 2022

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

LANGUAGES

Spanish (Native)   French (Fluent)   English (Fluent)