Felix Sanchez

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Multidisciplinary staff robotics engineer with over 5 years of professional experience in software development in C++ and Python and an interest in human-robot interaction, artificial intelligence, and game theory. Lead programmer for an unstructured-terrain software stack with over 300 software packages and top university research lab collaborations and experience in robotic hardware deployment, sim-real software bridging, and robotics research.

Professional Experience

Senior Robotics Engineer

Parsons Corporation, December 2020 - Current

Contracted 100% to the Army Research Lab to develop their autonomous ground vehicle artificial intelligence stack utilizing state of the art technologies to push the boundaries of autonomy in unstructured environments

- Led major restructuring of data saving and processing pipeline for robotic experiments, saving 100's of work hours
- Surpassed DARPA metrics in field experiments for the past 3 field experiments in autonomous ground navigation
- Collaborated with top academic partners in small 3-5 graduate students teams to integrate latest robotics research
- Implemented and tested different algorithms for navigation, computer vision, and context awareness using 3 years of previously collected data across approximately 10 robots and 20+ different experiments

Graduate Teaching Assistant

Worcester Polytechnic Institute, August 2019 - May 2020

Taught and tutored *Foundations of Robotics* and *Robot Controls* graduate classes for about 100 total students

- Developed 4 examples and solutions for each assignment found in various courses
- Offered tutoring for 1 hour, twice a week to students for comprehensive explanations on assignments
- Supervised and graded all exams and class projects during 2 semesters for various classes
- Customized study material by creating 1 hour long videos supplementing the professor's teachings once a week

Software Engineer Intern

Autonodyne, Summers of 2018 & 2019

Developed code independently to control various small unmanned aerial vehicles for military applications

- Upgraded existing software to allow for swarm operations; from 1 robot to up to 3 robots operated at once
- Increased available unmanned aerial vehicle test platforms; from 1 to 7 capable robots
- Re-engineered ATAK plugin for custom maneuver generation increasing usability by 25%
- Presented for 3 air force research lab military officers about our product's capabilities in 1 hour presentations

Education

Worcester Polytechnic Institute, Worcester, MA

- *Master of Science* (MS), Robotics Engineering, Sep. 2020
- *Bachelor of Science* (BS), Robotics Engineering, May 2019

Skills and Publications

Robotics: ROS/ROS2, Human-Robot Interaction, Machine Learning, Artificial Intelligence, UGVs/UAVs, Robot Controls, Autonomous Navigation, Computer Vision, 3D printing, Solidworks, CNC, Soldering, Laser Cutting, MIG Welding, UNIX, Git, Docker

Programming Languages: C++, Python, C#, C, Javascript, Java, Matlab, SQL

Other: Leading small teams (2-5 people), Agile and Full-stack software development, Technical presentations, Independently meeting deadlines

Recent Publications:

1. Rosser J. & Warnell G. & Lancaster E. & **Sanchez F.** & Fahnestock E. & Damm E. & Gregory J. & Howard T., *A Learning-based Approach to Motion Planning with State Lattices in Off-Road Environments*, Aug. 2025, https://doi.org/10.1109/CASE58245.2025.11163734
2. Damm E. & Lancaster E. & **Sanchez F.** & Bronder K. & Gregory J. & Howard T., *Incorporating Stochastic Models of Controller Behavior into Kinodynamic Efficiently Adaptive State Lattices for Mobile Robot Motion Planning in Off-Road Environments*, Aug. 2025, https://doi.org/10.48550/arXiv.2508.04384
3. Viswanath K. & **Sanchez F.** & Overbye T. & Gregory J. & Saripalli S., *Trailblazer: Learning offroad costmaps for long range planning,* May. 2025, https://doi.org/10.48550/arXiv.2505.09739
4. Gregory J. & **Sanchez F.** & Lancaster E. & Agha-mohammadi A-a. & Gupta S-k., *Using Decision Support in Human-in-the-Loop Experimental Design Toward Building Trustworthy Autonomous Systems*, Aug. 2023, https://doi.org/10.1109/ro-man57019.2023.10309571
5. Damm E. & Gregory J. & Lancaster E. & **Sanchez F.** & Sahu D. & Howard T., *Terrain-Aware Kinodynamic Planning with Efficiently Adaptive State Lattices for Mobile Robot Navigation in Off-Road Environments*, Oct. 2023, https://doi.org/10.1109/iros55552.2023.10341537
6. Guaman Castro M. & Triest S. & Wang W. & Gregory J. & **Sanchez F.** & Rogers J. &, Scherer S., *How Does It Feel? Self-Supervised Costmap Learning for Off-Road Vehicle Traversability*, May 2023, https://doi.org/10.1109/icra48891.2023.10160856