

Gilberto Marcon dos Santos

1 Vista Montana APT 3410
San Jose, CA 95134-2730
gilbertomarcon.com

marcondg@oregonstate.edu
gmarcon@fetchrobotics.com
Gilberto.MarconDosSantos@zebra.com

Education **Ph.D., Robotics, 2016-2020**

Oregon State University

Dissertation title: “Coordination for Scalable Multiple Robot Planning Under Temporal Uncertainty”

Advisor: Dr. Julie A. Adams

- Heuristics to form coalitions and allocate tasks while planning for multi-robot systems
- Algorithms for merging distributedly generated multi-robot plans
- Framework for executing plans on a multi-robot system (Pioneer robots)

M.S., Electrical and Computer Engineering, 2015-2016

Universidade Federal de Goiás, Brazil

Thesis title: “New Approaches for Segmenting Point Clouds Applied to Autonomous Robotics and 3D Reconstruction”

Advisor: Dr. Cassio D. Vinhal

B.S., Computer Engineering, 2010-2016

Universidade Federal de Goiás, Brazil

Capstone title: “A Low-Cost Mobile Platform for Autonomous Robotics Research”

Advisor: Dr. Cassio D. Vinhal

Exchange Student, Computer Engineering, 2013-2014

Rose-Hulman Institute of Technology, Terre-Haute, Indiana

Awards **Brazil Scientific Mobility Program**

CAPES Foundation, Brazil, 2013-2014

Skills **5+ years of R&D, software development, and system design:**

C, C++, Unity 3D (C#), Python, Java, Matlab, and Bash on both Windows and Linux

Ground robots: Pioneer P3-DX, Turtlebot 2, Summit XL 4WD and custom built

Aerial robots: Bitcraze Crazyflie UAV and custom built

Marine robots: Underwater Slocum Glider and Sea Surface ROSS

Work **Senior Robotics Engineer**

Experience Fetch Robotics, Now part of Zebra Technologies, 2020-
Multi-Robot Planning and Coordination

Work Experience

Graduate Research Assistant

Oregon State University, 2017-2020

- Developed a decision support system for coordinating multiple marine robots while searching for ocean features, such as upwelling fronts
- The interactive 3D GUI presents the data collected by all robots, their planned paths, and highlights the ocean features (C#, Python/Pandas)

Graduate Teaching Assistant

Oregon State University, 2016-2017

ME 451, Intro to Instrumentation and Measurement Systems: Instructed lab sessions

CS 325, Analysis of Algorithms: Held office hours and graded exams

Research Assistant

CAPES Foundation, Brazil, 2015-2016

- Developed fast methods for embedded obstacle recognition from stereo cameras (C++)
- Designed and implemented a mobile platform for autonomous multi-robot research

Undergraduate Research Intern, Summer 2014

UCSD Engineers for Exploration, San Diego, California

Developed a wildlife radio tracking system using UAV-mounted embedded computers and Software-Defined Radio techniques (C/Matlab)

REU Scholarship

CNPq Foundation, Brazil, 2012-2013

Developed a web visualization tool for residential power consumption data (PHP+HTML)

Publications

- [1] Gilberto Marcon dos Santos and Julie A. Adams. “Scalable Multiple Robot Task Planning with Plan Merging and Conflict Resolution”. In: *International Conference on Autonomous Agents and Multiagent Systems*. London, UK, May 2021, pp. 1776–1778.
- [2] Seth McCammon, Gilberto Marcon dos Santos, Matt Frantz, T. P. Welch, Graeme Best, R. Kipp Shearman, Jonathan Nash, J. A. Barth, Julie A. Adams, and Geoffrey A. Hollinger. “Ocean Front Detection and Tracking using a Team of Heterogeneous Marine Vehicles”. In: *Journal of Field Robotics* 38.6 (2021), pp. 854–881.
- [3] Gilberto Marcon dos Santos. “Coordination for Scalable Multiple Robot Planning Under Temporal Uncertainty”. PhD thesis. Oregon State University, June 2020.
- [4] Gilberto Marcon dos Santos and Julie A. Adams. “Optimal Temporal Plan Merging”. In: *International Conference on Autonomous Agents and Multiagent Systems*. Auckland, New Zealand, May 2020, pp. 851–859.

- [5] Gilberto Marcon dos Santos and Julie A. Adams.
“Plan Distance Heuristics for Task Fusion in Distributed Temporal Continuous Planning”.
In: *Multiagent and Grid Systems* 16.2 (2020), pp. 171–192.
- [6] Gilberto Marcon dos Santos and Julie A. Adams.
“Task Fusion Heuristics for Coalition Formation and Planning”.
In: *International Conference on Autonomous Agents and Multiagent Systems*.
Stockholm, Sweden, July 2018, pp. 2198–2200.
- [7] Ovunc Tuzel, Gilberto Marcon dos Santos, Chloë Fleming, and Julie A. Adams.
“Learning Based Leadership in Swarm Navigation”.
In: *International Conference on Swarm Intelligence*. Rome, Italy, Oct. 2018, pp. 385–394.
- [8] Gilberto Marcon dos Santos, Victor Ferrao, Cassio D. Noronha Vinhal, and
Gelson Cruz Junior.
“Fast algorithm for real-time ground extraction from unorganized stereo point clouds”.
In: *Pattern Recognition Letters* (2016), pp. 192–198.
- [9] Gilberto Marcon dos Santos, Victor Ferrao, Cassio D. Noronha Vinhal, and
Gelson Cruz Junior.
“An adaptive algorithm for embedded real-time point cloud ground segmentation”. In: *2015
International Conference of Soft Computing and Pattern Recognition, SoCPaR 2015*.
Fukuoka, Japan, Nov. 2015, pp. 76–83.
- [10] Gilberto Marcon dos Santos, Victor Ferrao, Cassio Vinhal, and Gelson da Cruz Junior.
“Performance analysis for a novel adaptive algorithm for real-time point cloud ground
segmentation”.
In: *International Journal of Hybrid Intelligent Systems* 12.4 (2015), pp. 229–243.
- [11] Gilberto Marcon dos Santos, Zachary Barnes, Eric Lo, Bryan Ritoper, Lauren Nishizaki,
Xavier Tejada, Alex Ke, Han Lin, Curt Schurgers, Albert Lin, and Ryan Kastner.
“Small unmanned aerial vehicle system for wildlife radio collar tracking”.
In: *IEEE International Conference on Mobile Ad Hoc and Sensor Systems*.
Philadelphia, Pennsylvania, Oct. 2014, pp. 761–766.
- [12] Gilberto Marcon dos Santos and Julie A. Adams.
“Decision Support for Multi-Robot Ocean Feature Detection”. In: (in review).
- [13] Gilberto Marcon dos Santos and Julie A. Adams. “Scalable Temporal Plan Merging”.
In: (in review).