Luis M. Pimentel

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Education

Georgia Institute of Technology, Atlanta, Georgia *January 2022 - present*
Master of Science in Electrical and Computer Engineering

Georgia Institute of Technology, Atlanta, Georgia *August 2017 – December 2021*
Bachelor of Science in Computer Engineering, GPA 3.71, Faculty Honors, Dean's List
Minor in Robotics

Georgia Tech Lorraine, Metz, France August 2019 – December 2019

Technical Skills

Programming: C++, C, Python, MATLAB,
Robotics: ROS/ROS2, Gazebo, PX4-Autopilot, GTSAM, OpenAI Gym, SLAM, planning, trajectory optimization, control
Software: Linux, Windows, PyTorch, ML/deep learning algorithms and libraries
Hardware: Robotics sensing technologies: camera, LIDAR, IMU; embedded systems and microcontrollers; strong electronics and prototyping skills
Communications: Latex, Jupyter, Markdown, Git/Wiki documentation, design proposals, technical posters

Relevant Coursework

Completed: Deep Learning, Machine Learning, Computer Vision, Robotics and Perception, Robotics and Autonomy, Math Found. of Data Science, Control System Design, Feedback Control Systems, Signals and Systems, Digital Signals Processing, Digital Design, Programming HW/SW Systems, Engineering Software Design
In progress: Statistical Machine Learning, Probabilistic Graphical Models

Professional Experience

Sandia National Laboratories, Albuquerque, New Mexico *Summer 2019, 2020 - Present*
Year Round R/D Undergraduate Intern, Autonomy for Hypersonics, Manager: Dr. Julie Parish

- Designed new quadcopter and hexacopter platforms increasing computational capabilities and expanding sensors.
- Developing software with ROS and PX4 used to perform physical and simulated experiments aiding in the research and development of autonomous algorithms for hypersonic flight vehicles; implemented algorithms related to optimal control, path planning, trajectory generation.
- Research in implementing real-time reinforcement learning based navigation techniques on physical multi-copters.

Georgia Tech Research Institute, Atlanta, Georgia *Summer 2018*
R/D Undergraduate Intern, CIPHER Laboratory, Manager: Chris Roberts

- Designed and developed a custom communication system using four STM32 embedded systems. This system used a custom communications protocol to transmit/receive messages through radio frequencies.
- Developed software applications to identify security vulnerabilities within the hardware devices and peripherals.

Research and Projects

Ecolymer River Robot *Spring 2021 – Fall 2021*
Perception Software Lead, PI: Dr. Michael West, Georgia Institute of Technology

- Sponsored culminating design project with the task of designing an Autonomous Surface Vehicle (ASV) with the capability of eliminating plastic pollution in rivers.
- Integrating autonomous capabilities of an ASV for plastic detection, localization, and autonomous navigation. Integrated an underwater stereo camera for plastic detection and localization using real-time deep learning based object detection algorithm and 3D point-cloud data.

The Dream Lab, PI: Dr. Cedric Pradalier, Georgia Tech Lorraine, Mets, France *Fall 2019*

- Wrote a software driver for operating an autonomous 1/10th scale racecar robot used for control and state estimation research.
- Integrated the software and hardware components for state estimation through an Extended Kalman Filter using an RGBD camera, GPS, and IMU.

VIP Active Safety for Autonomous and Semi-Autonomous Vehicles *Fall 2017 – Spring 2019*

Subteam Lead, PI: Dr. Panagiotis Tsiotras, Georgia Institute of Technology

- Managed students on the team in setting semester goals, tracking progress, and communicating progress to PI.
- Built and maintained the hardware of three AutoRally platforms: 1/5th scale racecar robots used for research applications in autonomous control and perception.
- Built ten 1/10th scale racecar robots and developed software applications for an autonomous navigation stack using ROS to implement SLAM, path planning, and trajectory generation in simulation and hardware using onboard sensors such as IMU, LIDAR, and stereo cameras.

Extracurricular and Service

Georgia Tech Eta Kappa Nu (HKN) *2021 – present*

- International IEEE honor society where I am involved in social, corporate, and service events.

Boxing Club at Georgia Tech *2017 – 2020*

- Founder and former President of Georgia Tech's first amateur college boxing team competing through USA Boxing.

Georgia Tech RoboJackets *2017 – 2018*

- Worked in the software development and integration of sensors for racecars used in autonomous racing competitions.

Honors and Awards

- Faculty Honors *2020 – present*
- Dean's List *2017 – 2019*
- Sandia National Laboratories Employee Recognition Award 2021
- Georgia Tech Tower Award 2017 - 2020
- Georgia Tech Best New Organization of the Year Award – Boxing Club *2019*
- 1st Place – Sparkfun Autonomous Vehicle Challenge Speed Demons Competition (RoboJackets) *2018*
- Martin Marietta Scholarship *2018*
- GCAA Scholarship 2018
- Hispanic Heritage Youth Award (Gold – Engineering) *2017*
- Hispanic Scholarship Fund Scholar *2017*
- 1st Place – Robotics at the Georgia State Technology Fair *2016*