

Luis M. Pimentel

lpimentel3@gatech.edu
+1 (678) 768-2626

www.luismpimentel.com
United States Citizen

<i>Education</i>	Georgia Institute of Technology , Atlanta, GA <i>Master of Science</i> , Electrical and Computer Engineering	January 2022 - present GPA: 4.00/4.00
	Georgia Institute of Technology , Atlanta, GA <i>Bachelor of Science</i> , Computer Engineering, Minor in Robotics	August 2017 - December 2021 GPA: 3.71/4.00
	Georgia Tech Lorraine , Metz, France <i>Study Abroad Program</i>	August 2019 - December 2019

<i>Technical Skills</i>	Programming Languages: Python, C++, C, MATLAB.
	Robotics: ROS/ROS2, Gazebo, PX4-Autopilot
	Software: Linux, Git, PyTorch, Python ML & Scientific tools/libraries, Google Cloud
	Hardware: Robotics sensing technologies: camera, LIDAR, IMU; embedded systems and microcontrollers; strong electronics and prototyping skills
	Communication: L ^A T _E X, Jupyter, Git/Wiki documentation, design proposals, technical & research posters, technical & research writing

<i>Selected Coursework</i>	Machine Learning: Math Foundations of Data Science, Machine Learning, Deep Learning, Statistical Machine Learning*, Probabilistic Graphical Models*
	Control Systems: Signals and Systems, Feedback Control Systems, Control System Design, Linear Systems and Controls* (IP), Networked Control and Multiagent Systems* (IP)
	Robotics: Robotics and Autonomy, Robotics and Perception, Computer Vision
	Other: Programming HW/SW Systems, Engineering Software Design, Digital Signals Processing, Digital Design
	* indicates graduate level; (IP) In Progress

<i>Professional Experience</i>	Graduate Research & Development Intern Summer 2019, Summer 2020 - present	Sandia National Laboratories Albuquerque, NM
	Manager: Dr. Julie Parish, PI: Dr. Zahi Kakish	
	* Currently researching, developing, and implementing algorithms for multi-agent systems. Current projects are related to topics in Multi-Agent Reinforcement Learning (MARL), multi-agent sensor fusion, learning decentralized safety-critical control, and software development for centralized multi-agent coordination on a fleet of multi-copters.	
	* Developed software infrastructure for performing physical and simulated experiments aiding in the research and development of autonomous algorithms. Aided in implementing several algorithms related to optimal control, path planning, trajectory generation, and intelligence-aided navigation.	
	* Designed and developed new multi-copter platforms with increased computational capabilities, and expanded the sensor suites for advanced autonomous flight. Contributed to establishing robotics infrastructure for an indoor multi-agent experimental test-bed.	

Undergrad Research & Development Intern Summer 2018	Georgia Tech Research Institute Atlanta, GA
Manager/PI: 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.	

<i>Research Experience & Projects</i>	Graduate Research Assistant Fall 2022 - present	Cognitive Optimization and Relational (CORE) Robotics Lab Atlanta, GA
	PI: Dr. Matthew Gombolay	
	* Researching methods to adapt the team compositions of heterogeneous multi-agent teams to new tasks within a Multi-Agent Reinforcement Learning (MARL) framework.	

Perception Software Lead Spring 2021 - Fall 2021	Georgia Institute of Technology Atlanta, GA
PI: Dr. Micheal E. West	
* 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.

Undergraduate Research, Special Topics

The Dream Lab, Georgia Tech Lorraine

Fall 2019

Metz, France

PI: Dr. Cedric Pradalier

- * Wrote a software driver for operating an autonomous 1/10 th 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

Georgia Institute of Technology

Fall 2017 - Spring 2019

Atlanta, GA

PI: Dr. Panagiotis Tsiotras

- * 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.

Workshop Papers

[W1] **Scaling Multi-agent Reinforcement Learning via State Upsampling**

Luis Pimentel*, Rohan Paleja*, Zheyuan Wang, Esmail Seraj, James Pagan, and Matthew Gombolay
In Proc. RSS Workshop on Scaling Robot Learning (RSS22-SRL), 2022

Leadership Service & Extracurricular

Boxing Club at Georgia Tech:

Fall 2018 - Spring 2021

Founder and former President of Georgia Tech's first amateur college boxing team competing through USA Boxing and USIBA. Developed core club organization and operations, leading to growth of over 100 members within two semesters since founding. Organized team competition at the 2019 USIBA National Tournament in Syracuse, New York. Organized the 2020 USIBA National Tournament in Atlanta, GA, hosting over 20+ universities (cancelled due to COVID-19).

Georgia Tech Eta Kappa Nu (HKN):

Spring 2021 - present

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

Georgia Tech RoboJackets:

Fall 2017 - Spring 2018

Worked in the software development and integration of sensors for race cars used in autonomous racing competitions. Competed in the 2018 Sparkfun Autonomous Vehicle Challenge in Boulder, Colorado, and the 2018 International Autonomous Robot Racing Competition in Toronto, Canada.

Honors & Awards

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 AVC Speed Demons Competition (RoboJackets)	2018
Martin Marietta Scholarship	2018
GCAA Scholarship	2018
Hispanic Heritage Youth Award (Gold – Engineering)	2017
Hispanic Scholarship Fund Scholar	2017