

Education

- **Technische Universität Darmstadt** Darmstadt, Germany
Ph.D. Candidate Apr. 2021 - 2024
– Industrial Ph.D. at the Bosch Center for Artificial Intelligence.
- **University of Toronto** Toronto, ON
M.A.Sc. Student (GPA: 3.74/4) Sep. 2017 - Sep. 2019
– Relevant courses: Introduction to Nonlinear Control, Computer Vision for Robotics, Convex Optimization, State Estimation for Aerospace Vehicles.
- **École Polytechnique de Montréal** Montreal, QC
International Exchange Student (GPA: 3.94/4) Sep. 2015 - Apr. 2016
– Relevant courses: Industrial Process Control, Robotics, Multivariable Systems, Control Systems, Introduction to Computer Control, Aerospace Systems Control.
- **Universidad Simón Bolívar** Caracas, Venezuela
B.Sc., Electronics Engineering, graduated Cum Laude (GPA: 4.59/5) Sep. 2011 - July 2017
– Relevant courses: Systems, Control Systems I & II, Computer Programming I & II, Computer Architecture I & II.

Research/Work Experience

- **Bosch Center for Artificial Intelligence** Renningen, Germany
Ph.D. Candidate Apr. 2021 - Ongoing
– Focus on safe and efficient model-based reinforcement learning.
- **Amazon Prime Air** Paris, France
Software Development Engineer I Oct. 2019 - Mar. 2021
– Developed production-level code for a large scale drone delivery project.
– Designed safety-critical, cross-team software components involving collaboration with large engineering teams.
– Kick-started a high impact, system-wide simulation project. Designed and implemented an initial prototype integrating the main business abstractions into a cohesive simulation engine, providing valuable technical and business insights.
- **Dynamic Systems Lab - University of Toronto** Toronto, ON
Graduate Researcher Sep. 2017 - Sep. 2019
– Collaborated in the design and implementation of a software architecture for controlling a swarm of quadrotors.
– Developed novel and scalable motion planning algorithms for swarms of quadrotors, surpassing current state-of-the-art methods.
– Created visually appealing demonstrations of my research, and has been showed to visitors of our lab multiple times.
– Installed, calibrated and integrated an ultra-wide band (UWB) localization system within our swarm software architecture. The setup was validated in our lab and also in a nuclear power plant mock-up facility.

- **Institute for Aerospace Studies - University of Toronto** Toronto, ON
Teaching Assistant *Sep. 2017 - Dec. 2018*
 – Marked homeworks and exams for two undergraduate courses: Mathematics for Robotics (ROB310) and Robotics (AER525).
- **Alter-Info** Caracas, Venezuela
Development Engineer *Nov 2016 - June 2017*
 – Lead a project to develop a testbench software in LabVIEW for the power generation control system of a S-32 submarine.
- **Mobile Robotics & Autonomous Systems Lab** Montreal, QC
Research Intern *Sep. 2015 - Aug. 2016*
 – Created a simulation environment for the trajectory control of a quadcopter.
 – Implemented two trajectory tracking controllers: cascaded PID and a linear quadratic tracker.
 – Tested the controllers under two localization systems: a VICON camera setup and an ultra-wide band localization system.
 – Presented the project as my Bachelor's Thesis at Universidad Simón Bolívar.

Publications

- C. E. Luis, M. Vukosavljev, and A. P. Schoellig, "Online trajectory generation with distributed model predictive control for multi-robot motion planning", *IEEE Robotics and Automation Letters*, vol. 5, iss. 2, pp. 604-611, 2020.
- C. E. Luis, A. P. Schoellig, "Distributed Trajectory Generation for Multiagent Systems", Master Thesis, University of Toronto, Canada, 2019.
- C. E. Luis, M. Vukosavljev, and A. P. Schoellig, "Towards scalable online trajectory generation for multi-robot", *Abstract and Poster, in Proc. of the Resilient Robot Teams Workshop at the IEEE International Conference on Robotics and Automation (ICRA)*, 2019
- C. E. Luis and A. P. Schoellig, "Trajectory Generation for Multiagent Point-To-Point Transitions via Distributed Model Predictive Control", *IEEE Robotics and Automation Letters*, vol. 4, iss. 2, pp. 357-382, 2019.
- X. Du, C. E. Luis, M. Vukosavljev, and A. P. Schoellig, "Fast and In Sync: Periodic Swarm Patterns for Quadrotors", in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, pp. 9143-9149, 2019.
- C. E. Luis and J. Le Ny, "Design of a Trajectory Tracking Controller for a Nanoquadcopter", Technical report, Polytechnique Montreal, 2016.

Skills

Programming Languages: C/C++, Java, JavaScript/TypeScript, Python.

Applications: MATLAB, ROS (Robot Operating System), LabVIEW, L^AT_EX, OrCAD Schematic Capture, Xilinx ISE, CodeWarrior 10.6, Unity Pro.

Laboratory Skills: Digital/analog oscilloscopes, circuit building and testing, electronics soldering.

Languages: Spanish (mother language), English (proficient-TOEFL iBT 105/120), French (fluent), German (basic).

Miscellaneous: Self-dependent and capable of conceiving original ideas, strong verbal and written communication skills in Spanish, English and French, excellent problem solving skills, research skillset from conception to implementation, team work.