Alexander Faché

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Objective

Robotics research assistant and drone enthusiast seeking engaging part-time spring 2021 and full-time summer 2021 internship positions within the field of robotics and autonomy. Self-starter making a profound impact on every team.

Education

Georgia Institute of Technology | Atlanta, GA **August 2016 - December 2020**
Bachelor of Science in Electrical Engineering. GPA: 3.87 / 4.00
Minors in Computer Science and Robotics.
Starting Master's spring 2021. Pursuing PhD fall 2021.

Skills and Coursework

- **Programming:** Python, Matlab, Java, C, C++, HTML/CSS
- **Software:** Git, Android Studio, Firebase, Jupyter, OpenCV, ROS, Autodesk Inventor, Adobe Illustrator, Blender
- **Hardware:** Arduino, Raspberry Pi, Pixhawk 4, Soldering, Benchtop Electronics
- **Fabrication and Machining:** 3D Printing, Laser Cutting, Woodshop
- **Robotics:** Control Systems, Kinematics Transformations, Image Processing
- **Computer Science:** Data Structures and Algorithms, Mobile Applications and Services, Machine Learning, Game AI
- **Communication:** Public Speaking, Technical Presentations, Technical Writing, Lead Group Discussions
- **Interests:** Drones, Robotics, Investing, Ultimate Frisbee (Division I), Scuba Diving (PADI open water certified)
- **Languages:** English, Flemish

Research Experience

Robotic Snake Research Assistant | Intelligent Vision and Automation Laboratory | Georgia Tech **August 2018 – April 2020**
Research group developing a cooperative robotic pair designed to increase operating range capabilities for exploration and mapping. Develop Leader-Follower robotic pair to allow for unprohibited evaluation of robotic snake planning and exploration frameworks.
• Prototype commands in MATLAB to control the movement of a TurtleBot and snake-like robot then publish in ROS and Python.
• Develop high level motion planner for snake-like robot execution of motion primitive sequence and navigation control.
• Experiment with robotic snake tracking using markers and live video feed for PID position control and following capabilities.
• NCUR 2019 publication: "Marsupially-Aided Robotic Snake Exploration and Navigation of Cluttered Environments".

Work Experience

Software Engineering Intern - Avionics Integration | Bell Textron Inc | Fort Worth, TX **July 2020 – August 2020**
Researched air-launched effects integration requirements for FARA mission. Developed test cases for DCU chip detect & fuzz burn module.
• Reviewed mission requirements, summarized data sheets, and attended weekly development meetings to gain ALE integration insight.
• Implemented and validated chip detect module through loopback testing for early engine failure warning for data concentrator unit.

R&D Intern - Center for Cyber Defenders | Sandia National Laboratories | Albuquerque, NM **May 2019 - July 2019**
Responsible for strengthening, researching, and collaborating on a chip analysis product and a solution to data inquiries.
• Engineered functionality of an automated hardware tester to increase efficiency of chip testing and analysis for internal lab.
• Constructed ontologies and developed natural language processing techniques to categorize and structure PDF data.

Projects

Pixhawk 4 Autonomous Quadcopter | Personal Project **June 2020 – Present**
Built an autonomous drone using the Pixhawk 4 flight controller. Created complementary step by step YouTube tutorials.

US Traffic Accidents and Weather Events Analysis | Machine Learning | Georgia Tech **February 2020 – April 2020**
Analyzed weather conditions and road factors to predict traffic accident crash severity using several supervised learning models.

Kidney Cancer Clinical Decision Support | Introduction to Medical Image Processing | Georgia Tech **February 2020 – April 2020**
Used patient tissue samples to perform preprocessing, feature extraction, and supervised learning to develop predictive models.

PID Ball Balancer | Introduction to Automation and Robotics | Georgia Tech **October 2019 – December 2019**
Built and programmed a 3-legged platform capable of stabilizing a ping pong ball using PID control laws using a camera feed input.

Freestyle FPV Quadcopter | Personal Project **January 2019 – Present**
Researched off-the-shelf hardware and software components to build and fly a freestyle FPV quadcopter.

Leadership

Peer Instructor | The HIVE - ECE Makerspace | Georgia Tech **September 2018 - Present**
Train and assist students for manufacturing equipment who are working on projects while fostering an innovative culture.