Alexander Faché

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OBJECTIVE

Robotics research assistant and drone enthusiast seeking engaging 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 (Georgia Tech) | Atlanta, GA   **August 2016 - expected December 2020**
M.S. Electrical Engineering starting spring 2021
B.S. Electrical Engineering, GPA: 3.87 / 4.00
Minor: Computer Science, Robotics

SKILLS

- **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:** Quadcopter FPV flying, Investing, Ultimate Frisbee (Division I), Scuba Diving (PADI open water certified)
- **Languages:** English (native), Flemish (native)

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 – 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 - 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 – 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 – 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 – 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 - Electrical and Computer Engineering Makerspace | Georgia Tech   **September 2018 - Present**
Train and assist students for manufacturing equipment who are working on projects while fostering an innovative culture.