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Petit-Port, Nantes
Pays-de-la-Loire, FRANCE
Canadian (with French scientific visa)

JULIAN ERSKINE

PhD Student in Robotics, Studying
Multi-Agent UAV Systems with a Focus
on Decentralized Formation Control



WORK EXPERIENCE & PROJECTS

PhD Student/Researcher

Laboratoire des Sciences du Numérique de Nantes

September 2018 - Present Nantes, France

Research (See pg. 2 for published work):

- Performed a complete analysis of quadrotor formation singularities
- Created control algorithms for more dynamic quadrotor formations
- Practical collaboration on work relating to UAV-based robots
- Reviewed papers for IEEE and ASME journals and conferences

Other Works:

- Instructed labs (in English and French) on the modelling and control of serial robots and non-linear systems using C++, Matlab and Simulink
- Coordinated the expansion of the LS2N drone fleet and testing arena
- Ran UAV demos for audiences ranging from UAV experts to the public

Research Assistant

Laboratoire des Sciences du Numérique de Nantes

February 2018 - August 2018 Nantes, France

- Developed a general methodology of modelling the wrench capabilities of reconfigurable quadrotor-based aerial cable-towed systems
- Designed and simulated a non-linear controller for a payload suspended from multiple quadrotors for accurate dynamic trajectory tracking
- Built, programmed, and tested a prototype with three customized drones for experimental validation of controller and wrench analysis
- Presented results at a conference and submitted two journal articles

Miscellaneous Smaller Projects

École Centrale de Nantes

September 2016 - December 2017 Nantes, France

- Workspace mapping, design optimization, and reconfiguration planning for discretely reconfigurable cable-driven parallel robots
- Optimal kinematic design and placement of serial and parallel robots
- Computer vision, visual odometry, and visual servoing using OpenCV

Engineering Internships and Summer Jobs

ATCO Gas May - Dec, 2014 Edmonton AB

Designed and managed over 30 natural gas distribution pipeline projects

Surrette Battery Company Jan - Apr, 2014 Springhill NS

Assisted in H&S, product quality, and production improvements

Seven Lakes Development May - Aug, 2016 Porters Lake NS

Worked as a chainsaw operator, and as a construction assistant

Big Cove YMCA Camp Jun - Aug, '11-13,15 Thorburn NS

Worked various management and counselling rolls at a youth summer camp

EDUCATION

PhD in Robotics (in progress)

École Centrale de Nantes

2018 - 2021 Nantes, France

Thesis title: Robust Control of Heterogenous Dynamic Drone Swarms

NSERC PGS-D Research Scholarship

M.Sc. in Advanced Robotics

École Centrale de Nantes

2016 - 2018 Nantes, France

Thesis title: Design and Control of Aerial Cable-Towed Systems

GPA - 17.9/20 Class Ranking - 1st

Masters Thesis Research Scholarship

B.Eng. in Mechanical Engineering

Dalhousie University

2011 - 2016 Halifax, Canada

GPA - 3.65/4.3

3x Sexton Scholar Award

Int. Baccalaureate Entrance Scholarship

LANGUAGES

English ★★★★★
French ★★★★★

SKILLS

Programming
My areas of proficiency are:

Matlab Simulink C++ ROS
Python Linux Gazebo

Design
I have used the following design tools:

SolidWorks MSC Adams 3D printing

Robotics
My direct experience includes:

Quadrotors Parallel Robots
Serial Robots Non-Linear Control
Swarms Vision-based Control
Kinematic & Dynamic Modelling