Eitan Bulka

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EDUCATION

MCGILL UNIVERSITY
PhD in Mechanical Engineering
Apr 2021 | Montreal, QC
Cum. GPA: 4.00

MCGILL UNIVERSITY
BEng, Mechanical Eng (Honours)
Dec 2015 | Montreal, QC
Dean's Honour List (All Semesters)
Cum. GPA: 3.93

NEWTON SOUTH HIGH SCHOOL
June 2011 | Newton, MA
Honor Roll (All Semesters)

COURSEWORK

GRADUATE
Estimation and Control of Robotic and Aerospace Systems
Control Systems
Real-Time Control Systems
Introduction to Robotics
Multidisciplinary Design Optimization
Optimization of Engineering Systems
Applied Machine Learning
Numerical Estimation Methods
Aircraft Performance, Stability, & Control

SKILLS

PROGRAMMING
Experienced:
Matlab • Simulink • C++ • ROS • Gazebo • LaTeX • Linux • Microsoft Office
Familiar:
Python • Solidworks

LINKS

eitanbulka.com
LinkedIn:// **eitanbulka**

AWARDS

Intramural Sports Hall of Fame Inductee
MEDA Scholarship
British Association Medal
MEUSMA Scholarship
Ralph & Ruth Collins Scholarship
SURE Award
James & Daisy Mathison Scholarship
Richard Laurence Weldon Scholarship
AP Scholar Award

ACADEMIC RESEARCH

AEROSPACE MECHATRONICS LAB | Research Assistant
Jan 2021 – Present | Montreal, QC
Developed a control strategy for collaborative payload transport with multiple drones. The solution was implemented in software-in-the-loop simulation and in outdoor flight testing.

AEROSPACE MECHATRONICS LAB | Graduate Researcher
Jan 2016 – Apr 2021 | Montreal, QC
Developed control and collision avoidance strategies for agile fixed-wing unmanned aerial vehicles. The algorithms were validated in simulations, hardware-in-the-loop simulations, and both indoor and outdoor flight tests.

AEROSPACE MECHATRONICS LAB | Undergraduate Researcher
Jan 2014 – Dec 2015 | Montreal, QC
Developed a model which predicts the effect of wind on a quadrotor and developed a pressure based wind sensor for measuring air flow on-board a quadrotor.

SELECTED PUBLICATIONS

E. Bulka and M. Nahon, "Autonomous Fixed-Wing Aerobatics: From Theory to Flight", International Conference on Robotics and Automation (ICRA), May 2018.

E. Bulka and M. Nahon, "A Universal Controller for Unmanned Aerial Vehicles", International Conference on Intelligent Robots and Systems (IROS), Oct 2018.

E. Bulka and M. Nahon. "Automatic Control for Aerobatic Maneuvering of Agile Fixed-Wing UAVs", Journal of Intelligent & Robotic Systems, 2019.

E. Bulka and M. Nahon, "High-Speed Obstacle-Avoidance with Agile Fixed-Wing Aircraft", International Conference on Unmanned Aircraft Systems (ICUAS), 2019.

E. Bulka and M. Nahon, "A Unified Control Strategy for Autonomous Aerial Vehicles", Autonomous Robots (under review).

E. Bulka and M. Nahon, "Reactive Obstacle-Avoidance for Agile Fixed-Wing Unmanned Aerial Vehicles," Field Robotics (under review).

INDUSTRY EXPERIENCE

UNMANNED AERIAL VEHICLE CONSULTANT | Montreal, QC
Vayu | February 2020 – July 2020
Initiated the detect-and-avoid project for a VTOL aircraft by surveying literature, selecting an algorithm, and implementing a solution in simulation. In addition to DAA, I improved the aircraft landing algorithm, and implemented the solution in simulation.
Notos Technologies | April 2019 – June 2019
Developed software to enable autonomous soaring capabilities for an unmanned aerial vehicle.

ALTAEROS ENERGIES | Instrumentation Intern
Sept 2017 – Oct 2017 | Somerville, MA
Configured and tested a differential GPS unit used on a tethered aerostat.

MCGILL UNIVERSITY | Teaching Assistant
Sept 2014 – Apr 2021 | Montreal, QC
Taught weekly tutorials for the following courses: Dynamics (6x), PDE's and Linear Algebra (3x), and System Dynamics and Control (1x).

RANGER AUTOMATION | Engineering Intern
June 2013 – Aug 2013 | Shrewsbury, MA
Created exploded views (CAD) of robots to assist the assembly line workers.