

# Adeel Ahsan

[in](#) [adeelahsaanawan](#) [✉](#) [maahsan@mun.ca](#) [☎](#) [+1-709-2197411](#)

## EXPERIENCE

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- Memorial University, St. Johns, Canada** | *Graduate Research & Teaching Assistant* Sep, 2023 - Present
- Nonlinear model predictive control design of a quadrotor
  - Optimal waypoint navigation for a drone
  - Hardware in loop simulation setup for DJI M300 drone using ROS
  - Teaching assistant for Mechatronics and Control Systems
- Turkish Aerospace, Islamabad, Pakistan** | *Control Design Engineer* April, 2023 - Sep, 2023
- Programmatic trimming and linearization of nonlinear models
  - Development of longitudinal and lateral flight control design for a fighter jet aircraft
  - Autonomous landing system design and safe-landing region prediction
  - Software and hardware in loop testing
- Advanced Rocket Technologies, London, UK** | *GNC Engineer (Part Time)* Jan, 2023 - Sep, 2023
- Development of nonlinear 6 DOF flight simulator and control design for a sounding rocket
- National Engineering & Scientific Commission** | *Assistant Manager* Aug, 2021 - April, 2023
- Development of 6 DOF nonlinear flight simulators for different aerospace systems
  - Design and development of flight control system for aerial vehicles
  - Software in loop testing of controllers in embedded C++ code
  - System identification of actuators and dynamical models of aerospace systems
  - Technical report writing and documentation of these projects, and testing procedures
- AZoNetwork** | *Technical Writer* Jan, 2022 - Oct, 2022
- Writing technical articles on robotics, AI, sensors, and nanotechnology
  - Conducting observational studies to improve understanding and content
  - Creating customized marketing-aligned content based on client needs
- National Engineering & Scientific Commission** | *Intern* July, 2020 - Aug, 2020
- Mathematical modeling and development of 6 DOF simulation for a quadrotor
  - Implemented various control strategies including loop shaping, PID, LQI, and H-infinity on a quadrotor
  - Implementation and flight testing for different control strategies on APM 2.8 autopilot
  - Calibration, pre and post flight testing of APM 2.8 based quadrotor

## EDUCATION

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- Memorial University of Newfoundland, Canada** Sep, 2023 - Present  
*Master of Engineering in Electrical Engineering*
- Major: Optimal Trajectory Planning and Control Design of a Quadrotor
- Institute of Space Technology, Pakistan** August 2021  
*Bachelor of Science in Aerospace Engineering* GPA: 3.75/4.0
- Thesis: Robust Control of a Quadrotor: An ADRC Approach

## SKILLS

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- MATLAB/Simulink
- Nonlinear Flight Simulator Development
- Flight Control Design
- Flight Dynamics
- Nonlinear Dynamic Inversion Control
- Nonlinear Model Predictive Control
- PID / LQR / LQI / Lead - Lag Controllers
- C/C++
- Python
- Pixhawk/PX4 Integration with MATLAB

## AWARDS

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- Vice Chancellor's Gold Medal** August 2021  
*Awarded a Vice Chancellor's Gold Medal for the best final year project*
- Government Fellowship Award** August 2018  
*Completed Bachelor's degree at IST under a fully funded Government fellowship*
- Chief Minister's Laptop Award** Sep 2017  
*Awarded a Chief Minister's laptop for excellent performance in Matriculation exams*

## PUBLICATIONS

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- M. A. Ahsan, H. Zeeshan Iqbal Khan, J. Rajput and J. Riaz, "Active Disturbance Rejection Control of a Quadrotor: A Comparative Study," 2022 19th International Bhurban Conference on Applied Sciences and Technology (IBCAST), Islamabad, Pakistan, 2022, pp. 444-450.