

# ADRIAN MUNGROO

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## EDUCATION

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### Georgia Institute of Technology

Bachelor's Degree in Aerospace Engineering – High Honors  
Full scholarship awarded by the Government of Trinidad and Tobago

Atlanta, Georgia  
Aug 2016 – May 2020

### University of the West Indies

International Mathematics Olympiad Trainee

St. Augustine, Trinidad  
Aug 2012 – July 2016

- Awarded the Hilbert Award (2014) and Von Neumann Award (2015) for outstanding performance
- Competed in the Asian Pacific Mathematics Olympiad annually
- Occupied a position in Trinidad's 2016 IMO team

## ENGINEERING RESEARCH EXPERIENCE

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### Aerospace Systems Design Laboratory (Hyperloop GT)

Aug 2018 – Current

- Sponsored by South Korean steel industry giant, POSCO
- Created a dashboard in JMP to predict demand and profitability of the Hyperloop
- Determined optimal ticket prices using probabilistic cost models using GIS data
- Used surrogate modelling theory and Monte-Carlo simulation to quantify uncertainty and propagate design decisions to market share
- Used Java to update transport demand modelling software to include the Hyperloop mode of transport
- Used Python to create an [online app](#) that interactively demonstrates how Hyperloop thermal fatigue is affected by system design variables

### Martian Advanced Renewable Systems (M.A.R.S) – Radiation Subdivision

Aug 2017 – May 2018

- Developed Monte-Carlo simulations in FLUKA and MATLAB to analyze radiation effects on Martian habitats
- Investigated the radiation shielding properties of the Martian in-situ material, Ferrock, using FLUKA
- Investigated the effect of polymers as enrichment to Ferrock and as a separate shield layer
- Won 2<sup>nd</sup> place and \$500 at the Spring 2018 VIP Research Poster Competition

### Create-X I2P (Team Gyrolauncher)

Jan 2017 – May 2017

- Used MATLAB to create trajectory simulations
- Used the Arduino to create a hall sensor tachometer to ensure desired launch angles

## ENGINEERING DESIGN EXPERIENCE

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### Designing a Special Operations Military Airplane - Megabat

Jan 2020 – May 2020

- Performed weight sizing to determine the required weights of the aircraft, including fuel and takeoff weight
- Performed constraint sizing to determine the propulsion requirements of the craft
- Iterated aerodynamic drag analysis, CG analysis, wing and tail design, stability, weight balancing and landing gear placement until a feasible design was converged to
- Approximated its procurement and operational cost and compared its financial performance to similar craft to make an attractive business case

## SKILLS, CONCEPTS & INTERESTS

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- Programming/Markup Languages: Python, MATLAB, Arduino, Java, LaTeX, FLUKA
- Software: SolidWorks, XFOIL, AVL
- Concepts: Optimization Theory, Control Theory, Aerodynamics, Thermofluid Dynamics, Vehicle Design/Analysis
- Languages: English (native), German (Introductory)
- Other Skills: Audio Engineering, Session Guitarist

## LEADERSHIP, SERVICE, & EXTRACURRICULAR ACTIVITIES

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### Guitarist for band – Prime Apocalypse

July 2010 – July 2016

- Hosted a self-managed event, "Holly Jolly Apocalypse", which raised over \$20,000 TTD in profit
- Collaborated with several renowned Trinidadian artists such as Kes the Band, Orange Sky, and Skid"Nevely
- Won several music awards, aired on live TV across the Caribbean and participated in charity events