Riddhiman Roy

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Research interests

Propulsion, Space Systems, Human Space Flight, Renewable Energy, Climate Change

Education

University of Toronto (UofT) — Toronto, Ontario, Canada
First Year, BASc in Engineering Science — August 2020 to Present

American School of Doha (ASD) — Doha, Qatar
ASD Diploma — August 2016 to May 2020
International Baccalaureate Diploma *Score: 41/45* — August 2018 to May 2020

The Village School — Houston, TX, USA
Grades 7 & 8 — August 2014 to July 2016

Training

Harvard University — *Online*
CS50: Introduction to Computer Programming — May 2019 to December 2019

Carnegie Mellon University - Qatar (CMUQ) — Doha, Qatar
Summer College Preview Program — May 2019 to August 2019
Classes in English, Calculus and Java

Brown University — *Online*
Renewable Energy Engineering — June 2018 to August 2018

Extracurricular Experience

University of Toronto Aerospace Team (UTAT) — August 2020 to Present
- Member of Propulsion subsystem, working on Liquid rocket "Hobouldt Jr."
- Programmer on Project Dark Matter - computer simulation for liquid rocket dynamics from liftoff to main engine cutoff.
- Integrating NASA CEA through RocketCEA in python to expand the simulator.

Graphics Director at Skule EDM Club at UofT — February 2020 to Present
- Member of the executive graphics design and website development team.
- Designed sponsorship matrix to attract sponsors.

Biomedical Engineering Competition (BMEC) — February 27-28th, 2021
- Placed 2nd out of 20 in a team of 4.
- Designed 'Mediway' - an application to route ambulances across a network of hospitals to reduce ER stress and physician burnout.
- Designed the app's information flowchart and prototyped the user interface.

UofT Engineering Kompetitions — January 2021
- Took part in Junior Design category with a team of 4.
- Designed a mechanical and accesible system for sorting fruits

Homegrown Rocketry — October 2017 to May 2018
- High school project to design and build a rocket from renewable materials
- Website: Homegrown Rocketry.

Skills

Spoken Languages — Fluent: English, Hindi; Spoken: Bengali, Spanish

Programming — Proficient in: Python, LaTeX; Familiar with: C, MATLAB, Java.

Awards and Recognition

President's Education Award (U.S Department of State) 2020
Citizenship Award (U.S Department of State) 2020
1st Place, Academic Games (NESAC) 2020
Academic Achievement, IB Physics HL (American School of Doha) 2019
National Honor Society Membership (American School of Doha) 2019

Research experience

Predicting GHG emissions of light vehicle fleets
Mentors: Professor Daniel Posen, May 2021 - Present
Professor Alexander Milovanoff and Professor Heather Maclean
- Computational model of greenhouse gas emissions of fleets light vehicles using FLAME (Fleet Life Cycle Assessment and Material-Flow Estimation) written in R.

Modelling the Thermal Expansion of a Bent Metal Strip
Mentor: Dr. Fernando Perez (ASD) January 2020
- Mathematical modelling of the thermal expansion of a deformed metal strip in the Qatari Sun.

How do different coefficients of rolling friction of a surface affect the angular speed of a ball?
Mentor: Mr. Alexander Bunting (ASD) November 2019 – January 2020
- Conduted two experiments to determine the coefficient of rolling friction and determine the effect on angular velocity.

Trasitioning Qatar to Renewable Energy - A Long Term Plan
Mentor: Dr. Indrek Kulaots (Brown University) May 2019 – July 2019
- Studied sustainable engineering and renewable energy through an online course at Brown University.
- Designed a plan for Qatar to transition completely from fossil fuels to renewable energy.
- Conducted land and climate analysis, wind turbine and solar panel evaluation, and financial estimates.

Teaching experience

Teaching assistant, Science Department, ASD Fall 2019 - Spring 2020
AP Physics 1: Advanced Placement Physics 1
- Worked with students through content of AP Physics 1 - Mechanics (translational and rotational), waves, and electricity and magnetism.
- Duties included helping proctoring exams, lab assistance and stand-in for teacher when absent.

Other interests

Badminton (played for my high school), tennis, table tennis, drawing