# Utkarsh Mali

May 5, 2022
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## Education

**B.Sc.(Hons.) University of Toronto** — Sep'18 - Ongoing

Physics specialist and mathematics minor with additional studies into the research and philosophy of science. Expected graduation in 2022. Dean's Honour List.

## Experience

**Summer Undergraduate Research Program (SURP), University of Toronto**
May' - Aug' 21

Machine learning intern at Dunlap Institute for Astronomy and Astrophysics. Model fitting visible counterparts to gravitational wave events. **Created a software** which predicts new light curves associated with binary neutron star mergers **using machine learning and Bayesian statistics**. Used Gaussian processes and principal component analysis in training stage. Used Markov-chain Monte-Carlo in Bayesian inference stage.

**Summer Undergraduate Research Fellowship (SURF), University of Toronto**
Jul' - Aug' 20

Image classification of Martian topographic features using machine learning. Created an **efficient scalable machine learning model in python using sklearn**. The model was tested against independent Martian surface data and used supervised machine learning methods and mask detection. The Martian surface data was provided by NASA HiRISE.

**Research Intern, Center for Quantum Technologies (CQT)** — May' - Jun' 20

Quantum computing intern at the National University of Singapore (NUS). Conducted **research in circuit quantum electrodynamics** by exploring a software automating the discovery of superconducting qubits. The software, written in python, used quasi-newton numerical optimisation which was tested using different qubit systems in the transmon qubit regime.

**Research Attachment, Singapore Synchrotron Light Source** — Jun' - Aug' 19

Attachment as a beamline scientist at the National University of Singapore (NUS) conducting research with Fourier Transform Infrared Spectroscopy (FTIR). **Research and analysis** into the adulteration of edible birds nest. Findings presented at FTIR workshop in Berlin by supervisor and at the University of Toronto Arts and Science Undergraduate Research Conference (ASSU-URC), by me. **Created a software with R** implementing multivariate analysis methods on spectral samples through RStudio.

**University of Toronto Aerospace Team** — Oct' 18 - May' 20

Development of the Heron Mk-II Satellite. **Designed and tested insulation and hardware components** for the payload bay, battery chamber and ground station using surface mount, through-hole and solder paste stencilling. Satellite scheduled for launch in early 2021. Publication: Contributing author.

**Office of the Dean of Students, Victoria College** — May 19 - Ongoing

Senior International Mentor (SIM). Developed and conducted orientation for international students at Victoria College. Ongoing event management of international students.

**National Service in the Singapore Armed Forces** — Oct' 16 - Aug' 18

Full time national service. Over 60 unique combat missions as a transport operator. Collectively, over 30 tons of military cargo and infantry/artillery regiments transported across the country. **Collaborative missions** with US, Australia, Malaysia and Brunei armies separately. Peacetime training in military techniques and weapon mastery focused around building mental resilience, growth in maturity and leadership skills.

## Skills

**Technical**
**Python** (Pandas, sklearn)
**R/RStudio** (Shiny, RMarkdown)
**Excel** (Goal-Seek, Macros)
**Java** (JavaFX)
**SQL**
**Photoshop**
$\LaTeX$

**Personal**
Problem Solving
Time Management
Communication

## Volunteering

| | |
|---|---|
| Academic Commission | Toronto |
| Science Center | Singapore |
| Tabitha Foundation | Cambodia |
| Primary School TA | Singapore |
| Womens Welfare | Singapore |
| Deep Griha Orphanage | India |