

Ruyi Xu

ruyi.xu@mail.utoronto.ca

+1 (647) 914 4516

Summary

I am an aspiring academic with a strong interest in mathematics and astrophysics. With interests in but not limited to nuclear processes in galaxies and stars as well as dynamics of star-forming regions.

I am an experienced problem solver and analyst as evidenced by my multiple wins in different competitions and I am also well versed in conducting research from my experiences in the National University of Singapore Science Research Program, a Research opportunity Programme and a research assistant position at the University of Toronto.

Experience

Treasurer

University of Toronto Physics Student Union

May 2024 - Present (1 month)

Planning and budgeting of finances and submission of receipts for reimbursement, planning of social, academic, equity and diversity events for physics undergraduate students.



Research Assistant

University of Toronto

Sep 2023 - Apr 2024 (8 months)

Used Machine learning packages in Python to identify molecular clusters in Perseus and Taurus star-forming regions, possible future work includes explaining the dynamics of such clusters under the supervision of Prof. Rachel Friesen.



Part Time Tutor

Tutor Doctor

Sep 2022 - Present (1 year 9 months)

1 on 1 tutor for mathematics and physics.

Tutoring students from grade 10 and up to 1st-year University.

Courses taught/teaching

MCR3U1 - Grade 11 Functions

SPH3U - Grade 11 Physics

UofT MAT133H1 - Calculus and Linear Algebra for Commerce

MHF4U - Grade 12 Advanced Functions



Officer

The Boys' Brigade

Jun 2013 - Jun 2021 (8 years 1 month)

Joined in middle school as a co-curricular activity, I returned after graduation to give back and grow with the organisation, progressing from a regular member to an officer cadet and eventually becoming an officer. During this time I was able to learn and practice skills such as organisation, leadership,

communication, and team-building all while gaining extensive experience in conducting lessons for youths and providing them guidance at the same time.

Some significant roles I held include:

Squad leader: 2014-2016

Non-commission officer council chairman: 2015

Character Quest competition team leader: 2015, attained gold in the competition

BB blaze competition team leader: 2015, attained silver in the competition

Head primer: 2017-2018

Combat Medic

Oct 2019 - Jun 2021 (1 year 9 months)

Served as a combat medic in the Singapore armed forces as the In-Charge for the triage station, noting patient conditions, vitals and history while functioning in a fast-paced role with regular urgent and stressful situations demanding focus and a calm mind.

Promoted to Lance Corporal on 1 August 2020

Promoted to Corporal on 1 June 2021



Marketing Intern & Front desk Receptionist

Indigo Education Group

Jun 2019 - Sep 2019 (4 months)

Key responsibilities include persuading parents, notifying students and parents of last-minute changes with a strong focus on customer relations and communication skills.



Retail and Finance Associate

The Boys' Brigade

Jan 2019 - Mar 2019 (3 months)

Key responsibilities include processing claims, organising uniform fitting sessions and closing of stations with a strong focus on organisation skills and meticulousness.

Education



University of Toronto

Bachelor of Science - BS, Astronomy and Astrophysics

Sep 2021 - Jun 2025

Astronomy and Astrophysics Specialist with a mathematics major

Enrolled in a self-directed reading programme with a Ph.D candidate about cosmology, relativity and astrodynamics.

Completed 2 projects on Designing Astronomy Labs in Python with the Unistellar eVscope under the supervision of Dr. Lea Hirsch.

Created a widget in javascript for determining Longitude and Latitude for the project:

<https://github.com/ruyixu00/Long-Lat-Finder>



Catholic Junior College

S-C GCE A-Level

2017 - 2018

High School Education

courses taken include

General Paper, Project work, Chinese, Physics, Chemistry, Mathematics, Economics



National University of Singapore

Non-Graduating Research Student, Physics

2017 - 2018

taken as GCSE-A Levels Higher-3 NUS-SRP program

Conducted theoretical research on "Modified Energy Dispersion Relations in Neutrino Oscillations"

link to abstract: <https://drive.google.com/file/d/1eBxy4daalVZ6lo5Fv9lf4LqnV9o3B6YR/view?usp=sharing>

Used Mathematica to render plots of comparisons between current and modified models for energy dispersion of neutrino oscillations.

Serangoon Garden Secondary School

S-C GCE O-Levels

Jun 2013 - Dec 2016

Secondary School Education

Graduated 10th in cohort

courses taken include

English, Chinese, Combined Humanities (Social studies & Geography), Combined Sciences (Biology & Chemistry), Physics, Mathematics and Additional Mathematics

Licenses & Certifications



University of Toronto 3D printing certification - University of Toronto

Combat Emergency Medical Technician

CPR/AED/First Aid

Issued Jan 2020 - Expires Jan 2022

Skills

Research Skills • Presentation Skills • Python (Programming Language) • Git • Lab Design • LaTeX
• JavaScript • Mathematica • 3D Printing • AutoCAD

Honors & Awards



COVID-19 Resilience Medal - Singapore Army

Aug 2023

A national award to recognise the substantive contributions of those who participated directly in Singapore's fight against COVID-19.



Chinese Professional Society Student Challenge - CPS - Chinese Professional Society

Aug 2023

Semi-Finalist in business Competition



ACE UTSG Stock Challenge - ACE UTSG

Aug 2023

2nd placing



Global Learning Case Competition - University of Toronto

Feb 2023

1st placing



Undergraduate Economics Council Case Summit Competition - University of Toronto

1st placing in Fall 2021

4th placing in Winter 2022

2nd placing in Fall 2022

2nd placing Fall 2023



Visionary Talks Science Communication Competition - Visions of Science

Jul 2022

Selected to be 1 of 11 presenters to present my own research on Neutrinos.



PYJAC 2022 - University of Toronto Mississauga

Jan 2022

Winner of PYJAC 2022 beginner category

Project: <https://github.com/ruyixu00/Bloop>



Anchors Award - The Boys' Brigade

2018

Awarded for completion of the Primer's programme with outstanding commitment



Founders Award - The Boys' Brigade

2016

Highest award attainable in the senior section of the Boys' Brigade Singapore



Big Science Competition - Australian Science Innovations

attained distinction for 2016



UNSW ICAS Science Competition - UNSW

attained distinction for 2014 & 2015



The National Science Challenge - A*STAR - Agency for Science, Technology and Research

2016

Quarter Finalist