Supporting A Departmental Culture of Undergraduate Research

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University of Toronto, Scarborough Campus

December 5, 2025

Research is the process of _____-ing and _____-ing knowledge.

Research is the process of creating and disseminating of knowledge.

Two Local Initiatives to Support Undergraduate Research

- MSLC Magazine / $U(T)$-Mathazine
- Undergraduate Seminar

MSLC Magazine / $U(T)$-Mathazine: History

Zohreh Shahbazi

MSLC Magazine (2016-2019)

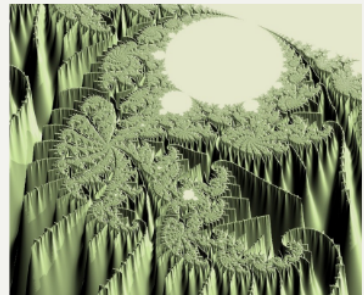
$U(T)$-Mathazine (2021-present)

Shahbazi, Z., & Glynn-Adey, P. (2020). *Using departmental publications to foster student creativity in mathematics.* Journal of Humanistic Mathematics, 10(2), 445-464.
DOI: 10.5642/jhummath.202002.20

MESSAGE FROM THE EDITOR

It is my absolute pleasure to present to you the very first issue of the Math & Stats Learning Centre's (MSLC) Magazine. Having been a part of the MSLC for the past three years, I can truly say that it has been an amazing and uplifting growth experience.

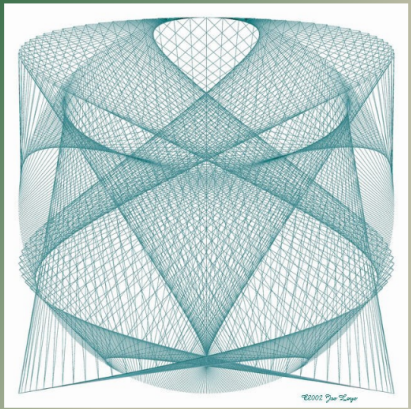
The Math & Stats Learning Centre is an integral part of the Centre for Teaching and Learning. It was developed to provide quality academic support in math and statistics to all UTSC students. Our primary mission is to get all the math and stats students engaged with their learning and development. It gives me such pleasure to see so many students making use of the resources (including this newsletter) available to them, which directly impacts their success here at UTSC. There is nothing we—I speak on behalf of all the amazing MSLC TAs—love more than having a roomful of students, eager to learn, eager to get their questions answered.



– Manaal Hussein 2015

MATH & STATISTICS LEARNING CENTRE MAGAZINE

SUMMER 2015



U(T)-MATHAZINE

ISSUE 10

SUMMER 2025

$U(T)$-Mathazine (Vol. 10) Partial Table of Contents

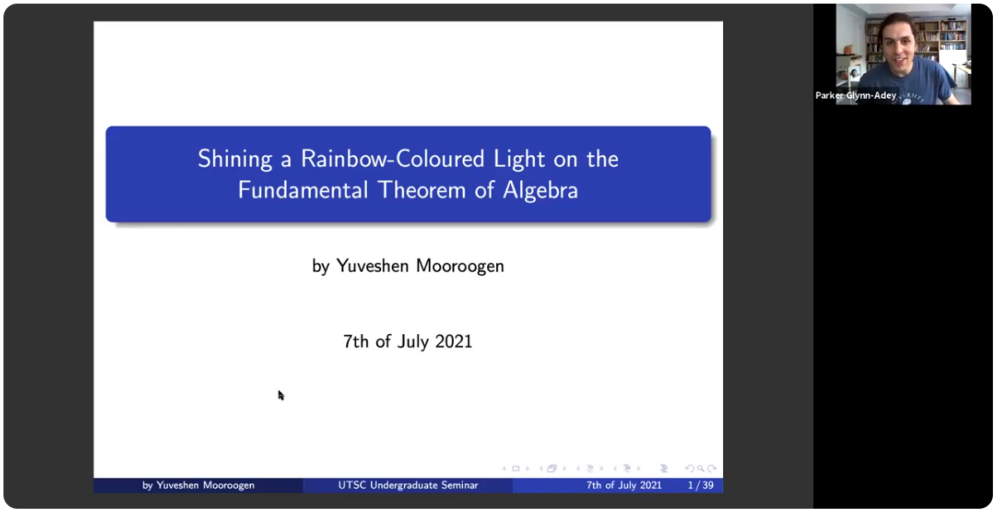
- *Faulhaber Polynomials and Finite Differential Calculus* by Parker Adey
- *Nimpossible to Lose* by Sabine Mohamad and Sanvi Dubey
- *Introduction to the Mathematics of Protein Folding* by Elena Osipyan
- *How Far is a Triangle from a Circle?* by Haohen Li
- *All Stars are Easy to Draw* by Avery Nie
- *Who Was Archimedes?* by Trevor Cameron
- *Exploring the Collatz Conjecture in a Mod 10 Universe* by Divy Wadhwani
- *Switch to Enrich: Lessons from the Monty Hall Problem in Medicine* by Lilaani Thangavadielu
- *The Fourier Transform: How Shazam Works* by Baqer Farhan and Aaron Fossi
- *Fully Homomorphic Encryption Using LWE* by Krit Grover

The Magazine: Process

- Students are invited to write articles in September.
- Potential writers are paired with faculty mentors.
- First drafts are due by π Day (March 14th).
- Drafts are peer-reviewed by edirotial board and past authors.
- The final draft is ready by early August.

Seminar: History

- MSLC Summer Seminar (circa 2019): CUMC Rehearsal.
- "Titles, Abstracts, Slides, Recordings" (2019-2022)
- Problem Solving Group (Summer 2023)
- Seminar (2024-2025)


Shining a Rainbow-Coloured Light on the Fundamental Theorem of Algebra
by Yuveshen Mooroogen
7th of July 2021
by Yuveshen Mooroogen
UTSC Undergraduate Seminar
7th of July 2021
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Parker-Glynn-Adey

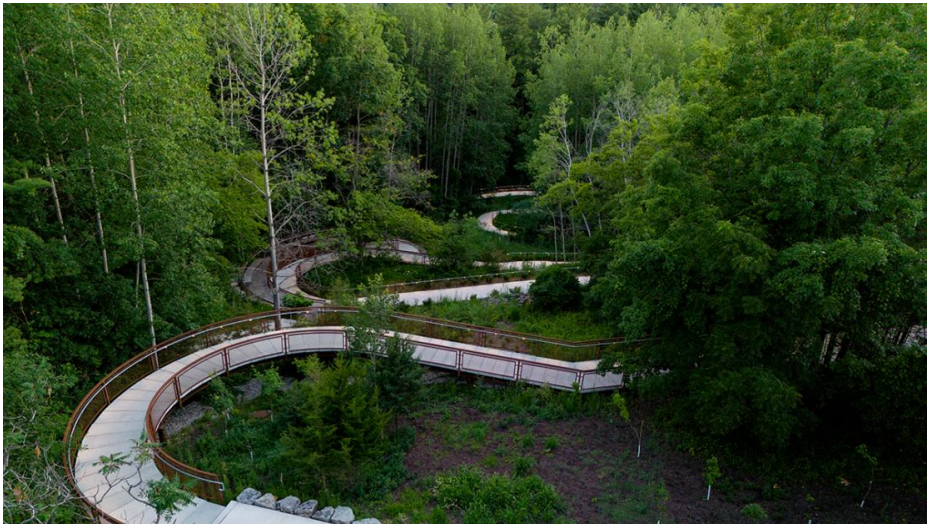
Shining a rainbow-coloured light on the fundamental theorem of algebra

Abstract: The graphs of real-valued functions on the real line are subsets of a two-dimensional space. As a result, we can sketch them on a piece of paper. The graphs of complex-valued functions on the complex plane, however, are subsets of a four-dimensional space. Good luck sketching that on a piece of paper. In this presentation, I will introduce "domain colouring", which is a technique used to illustrate functions of the complex numbers.

Prerequisites: Familiarity with the concept of dimension (for a vector space) and with the complex numbers. (Basic principles only. You should know what the notation $x + iy$ means, and how to convert it to modulus-argument/polar form.) Knowledge of multivariable calculus and complex analysis is not expected.

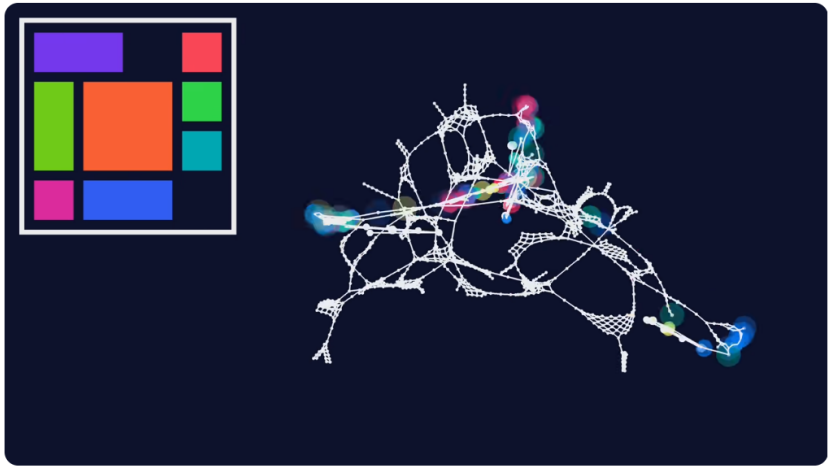
[1] Velleman, D.J. The Fundamental Theorem of Algebra: A Visual Approach. Math Intelligencer 37, 12–21 (2015). https://doi.org/10.1007/s00283-015-9572-7.

Problem Solving Group



Seminar (2025/11/27)

“I Solved Klotski” by 2swap (YouTube)



Knutson's Topology Problem

@AllenKnutson 3 months ago (edited)

Everyone's rightly gaga over the visuals and sound, but as a math sometime-YouTuber, I want to call out the excellent choice of topic. Everyone's familiar with sliding block puzzles, but not with moduli spaces, and this is a really friendly example.

EDIT: It occurred to me that instead of making a graph as he does, where the vertices have real meaning but the points along the edges don't individually, he could consider all *real* positions of the sliding block puzzle, where blocks are allowed to slide non-integer amounts. This would have the effect, for example, of replacing the semi-triangular grid at 2:12 with an actual solid triangle. It would then be interesting to figure out what homotopy types are achievable as the moduli spaces of positions of a sliding block puzzle (in various dimensions!).

Show less

1.8K Reply

16 replies

Seminar: Process

Weekly on Thursdays 10-11:00 in IA 4065.

- Make coffee and bring cookies. (Requires four or six hands.)
- Send e-mails about holidays, cancellations, etc.
- Socialize with students and encourage attendance.

Thank you!

Questions? Comments?

$U(T)$-Mathazine Call for Submissions

The slides and abstract for this talk.