

EDUCATION

**B. Sc. (Hons.) Mathematics**  
KIRORI MAL COLLEGE, UNIVERSITY OF DELHI, DELHI  
Majoring in **mathematics** with a minor's degree in **ec**

Nov. 2022 – PRESENT

## **ARTICLES**

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# On Computable Normed Almost Linear Spaces

2025

- We study the notion of a computable normed almost linear space and examine some results of the theory of operators in normed almost linear spaces in the context of computability. Specifically, we establish the effectiveness of the Inverse Mapping Theorem in the normed almost linear spaces.

Computable Analysis: Mathematical Foundations and Computability of Real Functions Using The TTE Approach

2025

- Co-authored with Sujit Kumar (first author), this paper gives a simple introduction to computable analysis, specifically, the representations-based approach. We introduce naming systems, admissible representations, along with computability on several objects used in real analysis. We end with showing the computability of differentiation and the absence of it in integration.

## RESEARCH PROJECTS

**p-adic numbers**, Supervisor: Mr. B. Sèmthanga

2025

- Studied the p-adic norm and its properties, Ostrowski's Theorem, construction of the field of p-adic numbers and their basic algebra, resulting in a 13-page report. Presented a talk on the p-adic metric space based on the report.

**Tracing Closed Curves with Epicycles**, Supervisor: Prof. S. K. Kaushik

2024

- In this paper me and my co-authors introduce the fundamental concepts of Fourier series and transforms (continuous and discrete), going into their mathematical formulations, properties and applications. Along with it is a python program that performs the discrete Fourier transform to animate closed curves (stored as SVGs) with epicycles.

**Big-O Notation**, Supervisor: Prof. S. K. Kaushik

2023

- Explored the mathematical foundations and applications of Big O notation in calculus and computer science, including algorithm complexity and asymptotic analysis. Emphasized rigorous formal definitions, graphical interpretation, and pedagogical approaches using Landau symbols for error estimation and function growth.

## СОВРОБАТЭ ЭКСПЕРИЕНС

**Freelance & Fractal**  
FULL STACK DEVELOPER

MAR 2023 – PRESENT

- Worked as a freelance full-stack web developer to support my college education, securing projects independently on Upwork and through Fractal, a freelance agency I co-founded.
  - Developed a range of internal business applications, e-commerce platforms, and designed digital media for brand communication, utilizing diverse web technologies and frameworks like Flutter, NextJS, Python (Tkinter, Selenium, Pandas), and others.

**Tagglabs Experimental Pvt. Ltd., Gurgaon  
SOFTWARE DEVELOPER (CONTRACT)**

OCT. 2023 – APR. 2025

- Began as an intern and was subsequently retained as a part-time/contract software developer after three months, reflecting strong early contributions.
  - Led the development of the alpha release of a cross-platform augmented reality, location-aware mobile application using Flutter for Android and iOS.
  - Developed an internal Flutter package for the application, integrating the SIFT algorithm for feature matching via native C APIs and the OpenCV library. Used Python's Django library for the back-end server of the platform.

## INDEPENDENT PROJECTS

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### Drawing My College's Logo on the Complex Plane

2025

- Implemented the Discrete Fourier Transform algorithm in Python to approximate the fourier series for SVG Paths using the DFT.
- Used Matplotlib to draw the logo onto the complex plane.

### Data Analysis and Visualisation with Pandas COURSE PROJECT

2024

- Worked on a US Housing dataset with the python libraries Seaborn, Pandas and Numpy.
- Drew statistical inferences using Violin Plot, Scatter Plot, KDE Plot etc.
- Found correlations between various characterisitcs of the US Housing market using basic statistical descriptions.

### Behavioural and Statistical Experiment RANDOMNESS CHALLENGE

2021

- Test the ability of users to be random by asking them to click 6 identical buttons in a random fashion.
- Uses different statistical methods to analyse the data collected, uses a REST API to store data in an Object Relational Database.
- Made using ExpressJS, ReactJS, Heroku and MongoDB.

### MERN Stack E-commerce Website CZ CREATION ONLINE SHOP

2021

- A fully fledged e-commerce website for a small business taking their products online.
- It has user authentication using JWT tokens, CRUD operations like the ability to add items to cart, place orders, forgot password etc. implemented using a REST API.
- Made using MERN stack, hosted on Heroku.

### Medicine Tracker Android App MEDCHECK

2021

- An app made using React Native that tracks your medicines for you and warn you whenever a particular medicine is running low.
- Made using Expo, React Native, SQLite3.

### Automatic Attendance System using Python and Tesseract-OCR BREEZE

2020

- Enables a teacher conducting a class to take attendance effortlessly in Google Meet using the chat. Made using Python and Tesseract-OCR.

## SELECTED COURSEWORK

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Real Analysis  
Abstract Algebra  
Linear Algebra  
Metric Spaces  
Complex Analysis

Numerical Analysis  
Probability and Statistics  
Differential Equations  
Multivariate Calculus  
Linear Programming

Financial Mathematics  
Functional Analysis  
Topology

## EXTRACURRICULAR ACTIVITIES

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### The Debating Society, Kirori Mal College MEMBER

FEB. 2023 - PRESENT

### Tensors, The Mathematics Society, Kirori Mal College CONTENT CO-HEAD

FEB. 2023 - JUL. 2023

### Parivartan, The Gender Forum, Kirori Mal College JOIN SECRETARY

NOV. 2022 - NOV. 2024

### IMPACT Project, a non-profit consulting group MEMBER

FEB. 2023 - NOV. 2023

### Energy Conservation Club, D.A.V. Public School ORGANISER

JUL. 2018 - MAR. 2020

## SKILLS

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- **Languages:** Hindi, English, Telugu
- **Programming Languages:** Python, Javascript, C++, R, Mathematica, SQL, Dart
- **Tools:** Vim, L<sup>A</sup>T<sub>E</sub>X, Linux, Bash, NodeJS, Flutter, ReactJS, React Native, TallyPrime ERP, Adobe Photoshop