Additi Pandey

Email: additi.pandey@gmail.com

Website: https://cyclotomicextension.github.io

Phone: +44 7825985293

LinkedIn: additi-pandey

EDUCATION

Oct 2021-Oct 2022 **M.Sc.** Pure Mathematics   London, United Kingdom
Imperial College London
Expected Grade: Merit

Jul 2021-Jul 2021 Vigyan Vidushi Program in Mathematics   Mumbai, India
Tata Institute of Fundamental Research
An advanced graduate summer school in mathematics for women students.

Jul 2018-Jun 2021 **B.Sc.(Honours)** Mathematics (Minor in Economics)   New Delhi, India
Jesus and Mary College, University of Delhi
Grade: First (CGPA:9.595/10.0)

SUMMER SCHOOL & RESEARCH EXPERIENCE

Apr 2022-Sep 2022 **Graduate Student**
Imperial College London
Supervisor: Dr. Jack Sempliner

- Worked on the dissertation titled "Reciprocity Laws" where I studied the proofs of quadratic and cubic reciprocity using Gauss sums and Artin reciprocity.
- Gained exposure to class field theory and studied the primes of the form $x^2 + ny^2$ for $n = 5, 26, 27$.

Aug 2020-Apr 2021 **Undergraduate Researcher**
Jesus and Mary College
Supervisor: Dr. Alka Marwaha

- Studied the characteristics and applications of Fractals, Mandelbrot and Julia Sets, Hausdorff dimension and Topological dimension of Fractals while analysing their areas and perimeters.
- Analysed and confirmed the relationship between a virus and its fractal dimension and concluded SARS-CoV-2 is lesser fatal and more curable than HIV.

Jun 2020-Nov 2020 **Students-Undergraduate Research Graduate Excellence Intern**
Indian Institute of Technology, Kanpur
Supervisor: Prof. D.L.V.K. Prasad

- Constructed models for India to find a function needed to analyse the transitions in the growth pattern of COVID-19 while analysing the trends in the growth of COVID-19 in Germany for project titled 'Exponential, Logistic and Power-Law Growth Patterns of COVID-19'.
- Concluded that given external factors like government restrictions and parameters that affect the mathematical models, a power-law function perfectly describes the growth pattern of COVID-19.

Jun 2020-Jun 2020 **Summer Research Intern in Algebra**
Harish Chandra Research Institute, Allahabad
Supervisor: Prof. Manoj Kumar Yadav

- Explored in depth the structure of finite fields: construction, splitting fields and isomorphism.
- Discussed in detail the structure theorem for finite abelian groups, the classification of groups, group actions(on a set), related permutation representations (learnt about the concept of core of a subgroup) and applications.

SHORT PROJECTS

- **Economics-** GDP & Unemployment- A Paradoxical Relationship (Group Project) • 2008 Financial Crisis and its Impact on Indian Economy (Group Project) • Review of 'Why Nations Fail' by Daron Acemoglu and James Robinson (Individual Work).

- **Data Science & Machine Learning-**Instabot • CIFAR-10 • Text Classification • Twitter Sentimental Analysis

- **Formalising Mathematics-**Are all cyclic groups abelian? and Defining Groups from First Principles • Defining Ideals from First Principles • Reflexive and Corpulent[1] Integers.

HONOURS AND AWARDS

- **Overall Topper in BSc (Hons.) Mathematics- Jesus and Mary College**
  - Awarded scholarship for scoring highest CGPA in the department (batch of 2018-21).

- **First Position in the First and Third Year of B.Sc. (Hons.) Mathematics- Jesus and Mary College**
  - Secured highest CGPA in the department in the first and third year (2018-19,2020-21).

- **Sh. Anand Prakash Johri Memorial Scholarship- Jesus and Mary College**
  - The scholarship was awarded for securing the highest marks in B.Sc. (Hons.) Mathematics first year (2018-19).

EXTRACURRICULAR ACTIVITY

Nov 2022-Present — **Bharatnatyam Dancer**
Prayag Sangeet Samiti
- Working towards a Junior Diploma in Bharatnatyam classical dance form.
- Gaining theoretical as well as the practical expertise in the dance form while also mastering the art of endurance, concentration, steadiness and agility.

Jul 2021-Sep 2021 — **Subject Matter Expert**
Iprep Learning Solution Private Limited (Cerebry)
- Encouraged creative thinking and motivated students by developing intuition-based mathematical problems across diverse curriculum.
- Designed dynamic problems based on student interests which are implemented by AI to increase overall grade of student by adjusting to their level of difficulty.

Aug 2019-Jun 2021 — **Volunteer**
National Service Scheme (NSS), Jesus and Mary College
- Participated in door-to-door plastic collection drive, COVID-19 lead collection, cleanliness drive and events focused on pertinent environmental, health and social issues.
- Tutored a middle school student.

Aug 2019-Jun 2021 — **Content Creator**
Finance and Investment Cell(FIC), Jesus and Mary College
- Wrote articles on finance and economics for the WordPress Blog and society newsletter-Compendium.
- Editor of Fintimes- newsletter launched during the COVID-19 Lockdown.

Aug 2019-Jun 2021 — **Content Writer**
Department of Mathematics, Jesus and Mary College
- Editor of the department Newsletter- Algorithm
- Content Sub-Head of the session 2019-2020.

Aug 2019-Jun 2021 — **Member**
Public Policy and Analysis Cell, Jesus and Mary College
- Collaborated with 3 members to write a month long academic project based on PM-KISAN Scheme.
- Won the 'Top Policy of the Month' and featured on the Medium Page of the society.

Apr 2016-Mar 2018 — **President**
Mathematics Club, St. Mary's Convent Inter College
- Secured first position on 'Activity on Mensuration'.
- Taught underprivileged children of the Ashadeep School.

CONFERENCES

---

[1]An integer $n > 0$ is said to be corpulent if $\forall\, a$ and $(a, n) = 1$, we have $a^2 \equiv 1 \pmod{n}$.

- **The Abel Lectures**:
  May 2021
  Attended lectures by Prof. Hillel Furstenberg - Random walks in non-euclidean space and the Poisson boundary of a group, Prof. Gregory Margulis - Arithmeticity of discrete subgroups and related topics, Prof. László Lovász - Continuous limits of finite structures, Prof. Avi Wigderson - The Value of Errors in Proofs

- **AMS paraDIGMS 2020 Fall Conference- Institute of Mathematical and Statistical Innovation (IMSI)**:
  Nov 2020
  Attended this first piece of the paraDIGMS initiative to build a community of practice for graduate program leaders in the mathematical sciences, with the goal of making the profession stronger, especially for students from groups traditionally underrepresented in mathematics.

- **Falling Walls: World Science Summit 2020- Walter de Gruyter**:
  Nov 2020
  Attended a panel discussion on Gender Equity and Diversity in STEM : Discussion on where we stand and how we can achieve gender equity and more diversity in STEM disciplines. The intersection of gender equity with issues surrounding race and sexual orientation were explored.

SKILLS

Linguistics: English(Native), Hindi(Native), Sanskrit(Intermediate), French(Elementary), Japanese(Elementary)
Programming: Lean (Functional Programming), Python, MATLAB, R, LaTeX, Maxima, SQL, Tableau

SHORT COURSES

- **Machine Learning Specialisation**: A three course specialisation offered by Stanford University and DeepLearning.AI on coursera- *In Progress*

- **Introduction to Python, Data Structures and Algorithms, Data Science and Machine Learning**: Attending this course offered by Coding Ninjas since July 2021 to gain expertise in Machine Learning- *In Progress*

- **GirlsWhoML**: Attended a 5 part lecture series on Introduction to Machine Learning- *Nov 2021*

- **Data Science- R Basics**: Attended this short course on EdX- *Feb 2019*
  Credential URL-
  https://courses.edx.org/certificates/ba727ff5c9374bae9b9ef5feebe57dfa