Vikas Srivastava

Curriculum Vitae

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Education

2012-2017 **5 year BS-MS dual degree(Mathematics Major)**, *Indian Institute of Science Education and Research(IISER) Mohali, India, Percentage:* ***88%***.

2012 **Senior Secondary School Examination**, *CBSE Board, Kendriya Vidyalaya(KV) Dilkusha Cantt, Lucknow, India, Marks aggregate: 94%*.

2010 **Secondary School Examination**, *CBSE Board, Kendriya Vidyalaya(KV) JLA Cantt, Bareilly, India, CGPA: 10/10*.

Experiences and Achievements

2019 Qualified **CSIR-UGC NET** Mathematics with **All India Rank(AIR)-40**

2019 **GATE Mathematics** 2019 Qualified

2012-2017 **INSPIRE Fellowship Holder**. This fellowship is awarded to top 1% students in the country by Department of Science and Technology (DST), India

Lectures, Talks and Poster Presentations

May 2017 Presented a poster on "Occurrence of Finite Groups as Galois Group over $Q(t)$: The Inverse Galois Problem" as part of 'Cynosure 2017', Mathematics Research Day event of IIT Ropar

April 2017 Presented a poster on "Occurrence of Finite Groups as Galois Group over $Q(t)$: The Inverse Galois Problem" as part of master thesis project

September 2016 Gave a talk on "Tits System, Monomial Matrices and BN pairs" as a part of 'Late Night Seminar Series' in IISER Mohali

July 2016 Delivered a talk on "On Partial Generalization of Bezout's Theorem to Higher Projective Spaces" as part of 'Visiting Students' Research Program (VSRP)' in TIFR, Bombay

April 2016 Delivered a talk on "Continued Fraction and Its Beautiful Applications" as a part of IDC452 Seminar-Delivery Course

March 2016 Delivered a talk on "Classification of Orientation Preserving Isometry of Hyperbolic Plane H^2" as part of 'MTH425: Geometric Group Theory' course in IISER Mohali

November 2015 Gave a talk on "Double Centralizer Theorem" as a part of 'MTH412: Structure of Algebras' course in IISER Mohali

November 2015 Delivered a talk on "p-adic Norm and Its Strange Properties" as a part of IDC451 Seminar-Delivery Course in IISER Mohali

July 2015 Gave a lecture on "Symplectic Groups" as a part of Summer Project in IISER Mohali

July 2015 Gave a lecture on " Introduction to Bilinear forms and Symplectic Groups" as a part of Summer Project in IISER Mohali

Masters Thesis(1 August 2016 - 27 April 2017)

Title **"Occurrence of Finite Groups as Galois Group over $Q(t)$: The Inverse Galois Problem"**

Supervisors **Professor Kapil Hari Paranjape**

Description The Inverse Galois Problem over $Q(t)$, the field of rational functions over Q is concerned with determining whether a given finite group G occurs as Galois group of some finite regular (ramified) extension of $Q(t)$. The problem has a rich history and it is still open. We described various methods to construct Galois extension of $Q(t)$. Working over $Q(t)$ has geometric advantage, as extensions of $Q(t)$ corresponds to covering of P^1 define over Q. We also worked on the idea of "Rigidity and Rationality of Finite Groups". The term rigidity was coined by Thompson. This method turns out to be very powerful as it gives a simple group theoretic criterion to determine whether a given finite group occurs as Galois group over $Q(t)$. The following people made major contribution towards building the theory; Thompson, Belyi, Matzat, Malle, Shih and Fried. We made some algorithms and implemented them in GAP to do the computations more efficiently. Using the idea of rigidity and rationality, we showed that various sporadic groups occur as Galois group over $Q(t)$.

Other Research Experience

3 June - 7 July, 2016 **Topics in Algebraic Geometry**, *worked under the guidance of Dr. Vijaylaxmi Trivedi at TIFR Bombay as a part of Visiting Student's Research Program(VSRP) of Mathematics*.
We followed Hartshorne's book on Algebraic Geometry. We studied first chapter of the book with focus on problem solving.

1 October - 25 November, 2015 **Analyzing the Role of LU Decomposition in Image Compression**, *Semester Long Project in the course on "Computational Methods in Mathematics" under the guidance of Dr. Kapil Hari Paranjape*.
There are many compression techniques - lossy as well as lossless. We divided our work into two parts. The first part deals with lossless image compression using LU decomposition. We encountered a paper on lossless image data compression through LU decomposition. We analyzed the authenticity of the aforementioned paper and found out that the LU decomposition proved to be useless for lossless Image compression. So, we were motivated to research further if it played any role in Lossy Image compression.

12 June - 28 July, 2015 **Bilinear Forms, Symplectic Forms and Quadratic Forms**, *Summer Project under the guidance of Dr. Amit Kulshrestha at IISER Mohali*.
We studied first four chapters of *Classical Groups and Geometric Algebra by L.C Grove*.

2 December - 28 December, 2014 **Introduction to p-adic Functions**, *Winter Project under the guidance of Dr. Amit Kulshrestha at IISER Mohali*.
In this project we followed *p-adic Analysis Compared With Real Analysis by Svetlana Katok.*

1 June - 25 July, 2014 **p-adic Analysis Compared with Real Analysis**, *Summer Project under the guidance of Dr. Amit Kulshrestha at IISER Mohali*.
In this project, we followed *p-adic Analysis Compared With Real Analysis by Svetlana Katok.*

10 December - 31 December, 2013 **Quaternions and Space Rotations**, *Winter Project under the guidance of Dr. Amit Kulshrestha at IISER Mohali*.

1 June - 20 July, 2013 **A Group Theoretic Approach to Fourier Analysis**, *Summer Project under the guidance of Dr. Kapil Hari Paranjape, Professor of Mathematics at IISER Mohali*.
We followed *Fourier Analysis on Finite Abelian Groups by Bao Luong* and *Fourier Series by R. Bhatia*. Apart from this, as a side project we also made some python program for Image Processing using Fourier Transform.

Computer Skills

Operating Systems	Working with Linux for the last 7 years, Distributions: Ubuntu, Debian, Fedora and Mint
Other Familiar OS	Windows: XP, Vista, 7, 8, 10
Software	Gnuplot, K3DSurf
Languages	Bash, Python, LaTeX
Numerical and Scientific Computing Libraries	Python: NumPy, SciPy, Matlpotlib
Computer Algebra System	GAP (GAP System for Computational Discrete Algebra), SageMath

Languages

Hindi	Native
English	Fluent
French	Basic

Other Interests

2018-Till now I have penchant for teaching and I am work as an **Advanced Mathematics Expert** at Chegg.com in my free time

2019- Till Now I am a published author and work as a **Freelance Sports Analyst** at Sportskeeda.com. Author's Profile: Link