Vaibhava Srivastava

Curriculum Vitae

DOB: *06 March 1997*
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Research Interest

Applied Mathematics & Analysis, & Mathematical Biology

Education

Spring '21-25 [anticipated] **Doctor of Philosophy, PhD (Applied Mathematics)**, *Iowa State University, USA GPA: 4.0/4.0.*

2018-2020 **Master of Science (Mathematics)**, *Indian Institute of Technology Gandhinagar, India, CPI: 8.25.*

2014-2017 **Bachelor of Sciences (Honors) in Mathematics**, *University of Delhi, Acharya Narendra Dev College, India, Percentage: 92.03%.*

2014 **Senior Secondary School Examination**, *Kendriya Vidyalaya(KV) Dilkusha Cantt, Lucknow, India, Marks aggregate: 93.2%, Physics, Chemistry, Mathematics(PCM): 93.66%.*

2012 **Secondary School Examination**, *Kendriya Vidyalaya(KV) JLA Cantt, Bareilly, India, CGPA: 10/10.*

Current Employment

Spring '21- **Graduate Teaching Assistant**, *Department of Mathematics, Iowa State University.*

Publications

1. V. Srivastva and A. Cheviakov, *Narrow Escape Brownian Dynamics Modeling in the Three-Dimensional Unit Sphere*, arXiv preprint arXiv:2107.01233, (2021)

Teaching Experience

Recitation Instructor and Conducted Weekly Office Hour Sessions

- **Math 165** Calculus I (Spring '21)

Grader

- **Math 150** Discrete Math for Business and Social Sciences (Summer '21)

Under-Graduate Teaching Experience

- Member of Problem Solving Group at IIT, Gandhinagar, India.
- Advanced Mathematics Tutor at Chegg (2018-2020)

Research Experience

July 2019 -July 2020 **Master's Dissertation**, The Qualitative Study of the Eigenvalue and Eigenfunctions of the Strong Localized Perturbed Eigenvalue Problem.

A dissertation submitted in partial fulfillment of the requirements for the degree of Master of Science in Mathematics, Indian Institute of Technology Gandhinagar under the guidance of Dr Jagmohan Tyagi (email: jtyagi@iitgn.ac.in).

This thesis considers the study of some of the qualitative properties of the asymptotic approximations for the perturbed eigenpairs for the above eigenvalue problem by making use of the method of matched asymptotic expansions for a small parameter, which measures the extent of the perturbation.

May-July 2019 **SURI-2019**, Summer Undergraduate Research Initiative, 2019 at University of Saskatchewan, Canada.

Secured **second position** in poster presentation at SURI- 2019 held at USask, Saskatchewan, Canada.
We worked on the Brownian Dynamics Modelling for the Narrow Escape Problem in the case of unit sphere under the guidance of Dr. Alexey Shevyakov(Alternative spelling/in research papers: Alexei F. Cheviakov, email: shevyakov@math.usask.ca). An efficient MATLAB-based code was developed which was used to model the Narrow Escape Problem.

June-July 2018 **SPIM 2018**, Summer Program in Mathematics (SPIM) in Mathematics 2018 at Harish-Chandra Research Institute(HRI), Allahabad.

The Program involves intensive lectures on Algebra (Group Theory, Field Theory), Analysis (Measure Theory, Basic Complex Analysis) and Topology (Set Topology up to homotopy theory) over a period of three weeks in the summer.

May-June 2017 **MTTS 2017**, Selected in Mathematics Training and Talent Search Program Level 1 at RIE Mysore .

June 2015-2016 **Delhi University Innovation Project ANDC – 304**, Delhi University Innovation Project under the guidance of Dr. Chaman Singh, Dr. Sadanand Prasad and Dr. Arijit Chawdhuri at Acharya Narendra Dev College, University of Delhi.

We developed a portable Electronic Nose prototype with autonomous and stand-alone operation for quantified Ambient Air Pollution (AAP) measurement using wireless data transfer protocol on Android enabled phone.

June-July 2016 **IAS-SRFP 2016**, Indian Academy of Sciences Summer Research Fellowship Program IAS-SRFP 2016 under the guidance of Dr. Sanoli Gun at IMSc Chennai.

A summer research project about analyzing structure of groups and rings. Report was selected and approved by the Indian Academy of Sciences.

July 2016 **FACETS 2016**, *Attended* Facets *2016, the 2016 edition of the IMSc outreach program for advanced undergraduate*.

Poster Presentations

Nov 2019 Short project and presentation on Image processing using diffusion equation.

July 2019 Secured **second position** in poster presentation on Brownian Dynamics Modelling for the Narrow Escape Problem at SURI-2019 held at USask, Saskatchewan, Canada.

π Day 2019 Presented poster on The topological properties of Stereographic Projection and its applications in the real world at IIT, Gandhinagar, India.

May 2019 Presented and designed the 3-D Geodesics, the Icosahedron at IIT, Gandhinagar.

October 2018 Presentation on Folktale and its historical significance in the Awadh region at IIT, Gandhinagar, India.

Computer Skills

Software **Numerical and Scientific Computing Libraries :** MATLAB, Mathematica, NumPy.

Other Mathematical Softwares : SQL, Tora, Spyder(IDE).

Languages LaTeX, Python, C++.

OS Working with Linux for the last 4 years, Distributions: Ubuntu, Peppermint, Fedora, openSUSE.

Worked with Windows for the 4 years, Distributions: Windows 7,8,10.

Familiar OS Windows: XP, Vista, Mac OS.

Organizational Skills

Summer '21- Current treasurer of the SIAM Student Chapter at Iowa State University.

2019 Organizer of Mathegon : Mathematical fest of Indian Institute of Technology Gandhinagar.

2014-2017 Organizer of MATRIX : Mathematical fest of Acharya Narendra Dev College University Of Delhi.

Courses Taken

Graduate Level

Applied Mathematics: Method of Applied Mathematics II, Numerical Analysis II

Interdisciplinary Courses: Presentation Skills for International Teaching Assistants, Orientation for Mathematics Graduate Students II

Under-Graduate Level

Applied Mathematics: Partial Differential Equations, Ordinary Differential Equations and Mathematical Modelling, Advanced Probability Theory, Numerical Methods and Programming, Linear Programming and Theory of Games, Calculus.

Pure Mathematics : Algebraic Topology, Introduction to Functional Analysis, Complex Analysis, Topology, Measure Theory, Introduction to Linear Algebra, Basic Algebra, Topics in Real Analysis.

Interdisciplinary Courses: Probability and Statistics, Discrete Mathematics, Physics(theory and lab course), Chemistry(theory and lab course), Environmental Studies, Foundational Sanskrit, Introduction to Computing, Academic and Scientific Writing.

Community Service

2009-2014 The Bharat Scouts and Guides

o Rajyapuraskar Awardee

o Worked for the welfare of the rural areas of India.

o Active volunteer for various literary programs conducted for the rural areas.

Languages

HINDI: Native ENGLISH: Fluent SANSKRIT: Basic