Jishnu Parayil Shibu

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Profile Summary

Broadly interested in problems at the interface of analysis and geometry, which include topics from geometric analysis, PDEs, harmonic analysis, and related areas. A second-year Master's student in Mathematics at the Indian Statistical Institute, where my current Master's project is in geometric measure theory. Previously worked with Prof. Benjamin Andrews at the Australian National University on geometric flows and the calculus of variations. During my BSc. in Mathematics, undertook research internships in machine learning, which, although no longer my focus, culminated in a publication.

Education

Indian Statistical Institute Kolkata, India

MSc. in Mathematics, CGPA (till present): ***94.0/100*** *Jul. 2024 - May. 2026*

Relevant Coursework:

- Geometric Measure Theory, Fourier Analysis, Functional Analysis, Differential Geometry I, Riemann Surfaces, Teichmuller Theory, Symplectic Geometry, Probability Theory, Measure Theory, Analysis on Manifolds, Algebra I and II, Topology I and II

Sri Aurobindo International Centre of Education Puducherry, India

BSc. in Mathematics, ***Best Student Award*** *Dec. 2020 - Oct. 2023*

- Mathematics, Mathematical Statistics, Physics, Computer Science, English, French

Research Experience

Master's Project (Sem. 3) in Geometric Measure Theory Jul. 2025 - Present

Under Prof. Partha Sarathi Chakraborty, Indian Statistical Institute

- Studied topics in geometric measure theory from *Measure Theory and Fine Property of Functions* (Evans and Gariepy, 1992)
- Prepared a mid-semester report on "An Exposition of the Area Formula" (available here)
- Prepared an end-semester report on "The Generalized Divergence Theorem for Sobolev Functions and the Co-Area Formula for BV Functions" (available here)
- Will extend this work next semester (sem. 4) by studying Simon's *Geometric Measure Theory*

Reading Project with Prof. Benjamin Andrews May. 2025 - Jul. 2025

Future Research Talent Program, Australian National University

- Studied topics in geometric flows from *Extrinsic Geometric Flows* (Andrews et al. 2020)
- Explored topics in the calculus of variations using *Variational Methods* (Michael Struwe 1990)

Research Intern Apr. 2023 - Apr. 2024

Prof Min Xu's lab, Carnegie Mellon University *remote*

- Co-authored a research paper which introduces a novel video anomaly detection framework under a lab automation setting

Machine Learning and Robotics Researcher Feb. 2022 - Mar. 2024

FG Intelligent Autonomous Systems Group, Technische Universität Darmstadt *remote*

- Contributed to the development of multiple projects which include computer vision, robotics and software development

Publications

Deep Video Anomaly Detection in Automated Laboratory Setting

Jishnu Parayil Shibu, Vibhu Dalal, Min Xu, Ali Dabouei et. al. 2024

Link (Accepted in journal 'Expert Systems with Applications Elsevier')

Awards & Honors

- Recipient of the **Future Research Talent (FRT) Award, Australian National University**. Awarded AUD 8,500 to support a 12-week research internship in geometric analysis under Prof. Ben Andrews: 2025
- Selected for the **M.Math program at the Indian Statistical Institute (ISI)** through a national entrance exam and interview (**All-India Rank 11**); awarded merit-based stipend: 2024
- Recipient of the **Best Student Prize** when completing undergraduate degree: 2023
- 11 Time Winner of the **Prize for Academic Excellence**: 2013-2023
- Recipient of a **Double Promotion**, successfully completing Class 11 and Class 12 within a single academic year: 2019-2020

Additional Courses

Student under Prof. Vikraman Balaji Feb. 2023 - Nov. 2023

Chennai Mathematical Institute

- Explored various topics spanning from Abstract Algebra, Linear Algebra, and Analysis
- Identified and worked on potential gaps in knowledge, building a solid foundation for graduate level mathematics

Work Experience

Machine Learning Engineer May. 2024 - Jul. 2024

Neptune Technologies LLC, Naples, Florida *remote*

- Contributed to the development of machine-learning models for stock-market prediction and to the overall software pipeline.

Standardised Test Scores

International English Language Testing System (IELTS): 8.5/9 Oct. 2025

Listening (9), Reading (9), Writing (8), Speaking (8)

Diplôme D'Études en Langue Française DELF B2: 91.5/100 Dec. 2023

Listening (23), Reading (20.5), Writing (23), Speaking (25)

Graduate Record Examinations (GRE): 332/340 Oct. 2023

Quant (168), Verbal (164), AWA (4.5)

Extra-curricular activities

Piano and Tabla Dec. 2015 – Present

Musical Instruments

Physical Education Dec. 2009 – Oct 2023

Gymnastics, Athletics, Aquatic Sports, Games (Football, Basketball, Volleyball, Hockey)

Academic References

Prof. Ben Andrews, Professor at Australian National University, Canberra, Australia, +61 2 6125 3458, Ben.Andrews@anu.edu.au

Prof. Partha Sarathi Chakraborty, Professor at Indian Statistical Institute, Kolkata, India, parthacsarathi.isi.smu@gmail.com

Prof. Samik Basu, Associate Professor at Indian Statistical Institute, Kolkata, India, samikbasu@isical.ac.in

Shanti Ramanathan, Teacher of Mathematics at Sri Aurobindo International Centre of Education, Puducherry, India, +91 9944611954, shanti.ramanathan@gmail.com

Prof. Vikraman Balaji, Distinguished Professor at Chennai Mathematical Institute, Chennai, India, +91 9884392556, vikramanbalaji@gmail.com

Prof. Jan Peters, Full Professor (W3) at Technische Universität Darmstadt, Germany, +49 61511625374, peters@ias.tu-darmstadt.de