

M.V.Ajay Kumar Nair

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in LinkedIn Profile
🐙 Github Profile

Education

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| 2019-2025 | PhD in Mathematics
<i>Indian Institute of Science Bangalore</i>
Advisors: Prof. Subhojoy Gupta and Prof. Siddhartha Gadgil |
| 2013-2018 | BS-MS with Major in Mathematics
<i>Indian Institute of Science Education and Research Bhopal</i>
MS Thesis Advisor: Prof. Kashyap Rajeevsarathy |

Professional Experience

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| Oct 2025 - | Postdoctoral Researcher
<i>Indian Institute of Science Bangalore</i>

As a Postdoctoral Researcher, I will be contributing to the open source project LeanAide which is led by Prof. Siddhartha Gadgil. This project is funded via the <i>AI for Mathematics Fund</i> managed by Renaissance Philanthropy and XTX Markets. |
| May 2025 - | Human Frontier Collective Fellow
<i>Scale AI</i>

As an HFC fellow, I am working on evaluating state-of-the-art Generative AI models. I am involved in designing frontier level mathematics problems and critique the solutions generated by AI models. |
| Nov 2024 -
July 2025 | Research Intern
<i>ARC-Net</i>

As a research intern, I worked on Autoformalisation i.e., automatically translating natural language proofs into Lean Theorem Prover. I was involved in testing the LeanAide software and suggesting improvements to the features. |
| Jun 2023 | Tutor, Lie Groups
<i>Advanced Instructional School(AIS)- Lie Groups and Lie Algebras</i>

As a Tutor for this AIS, I was responsible for helping the students with the problem sheets. |

Dec 2021	Tutor, Real Analysis <i>Winter School for Young Women in Mathematics</i> As a Tutor for Real Analysis, I was responsible for holding problem-solving sessions and clearing doubts in the content covered.
2022-23 Sem-I	Teaching Assistant (UM 201) <i>Department of Mathematics, IISc Bangalore</i> As a TA for UM 201 (Probability and Statistics), I was responsible for tutorials and grading exams and quizzes.
2021-22 Sem-I	Teaching Assistant (MA 200) <i>Department of Mathematics, IISc Bangalore</i> As a TA for MA 200 (Multivariable Calculus), I was responsible for tutorials and grading assignments and exams.
2020-21 Sem-I	Teaching Assistant (MA 261) <i>Department of Mathematics, IISc Bangalore</i> As a TA for UM 201 (Probability Models), I was responsible for tutorials and grading exams and quizzes.
Summer 2017 Summer 2016	Content Development Intern <i>Centre for Research in Advanced Technology for Education in Science (CREATES)</i>
Sep-Nov 2018	During this Internship, I developed quizzes and educational content in Mathematics of undergraduate level.
2017-18 Sem-I	Teaching Assistant (HSS) <i>Department of Humanities and Social Sciences, IISER Bhopal</i> As a Teaching assistant for HSS 101 (English for Communication), I helped the instructor in grading.

Fellowships

2019-2024	NBHM PhD Fellowship <i>Department of Atomic Energy, India.</i>
2013-2018	INSPIRE Fellowship <i>Department of Science and Technology, India.</i>
Summer 2015	Summer Research Fellow <i>Indian Academy of Sciences.</i>

Publications

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| 2025 | On dynamics of the Mapping class group action on relative $\mathrm{PSL}(2, \mathbb{R})$ -Character Varieties, to appear in <i>Groups, Geometry and Dynamics</i> |
| 2024 | The Goldman bracket characterizes homeomorphisms between non-compact surfaces (with Siddhartha Gadgil and Sumanta Das), to appear in <i>Algebraic and Geometric Topology</i> |
| 2023 | Factoring periodic maps into Dehn twists (with K. Rajeevsarathy and N. K. Dhanwani), <i>Journal of Pure and Applied Algebra</i> , 227(1). |

Academic Activities

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| 2022-25 | Co-Organiser, Students' Topology Geometry Seminars, Department of Mathematics, IISc. |
| 2023 | Postdoc-Student Symposium, 2023, Department of Mathematics, IISc. |
| 2021-23 | Co-Organiser, Prime Time Seminars, Student Seminars in Department of Mathematics, IISc. |
| 2017 | Student Volunteer, Regional Workshop on Research and Opportunities, Indian Women in Mathematics(IWM). |
| Nov 2016 | Student Volunteer, Indian Academy of Sciences 82 nd Annual meeting at IISER Bhopal. |

Extra-curricular Activities

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| 2016-2017 | Member, Central Advisory Committee of Student Activity Council(SAC) at IISER Bhopal. |
| Apr 2016 | Member, Organizing Committee of Luminaire'16, Movie Festival at IISER Bhopal. |
| Oct 2015 | Organiser, Arts and Letters'15, Literary festival at IISER Bhopal. |
| Jan 2015 | Member, Core Organizing Committee of Singularity'15, Science Festival at IISER Bhopal. |
| 2014-2015 | Member of Prayaas, A Social initiative Club in IISER Bhopal |
| 2014-2015 | Vice-Secretary, Fine Arts and Literary Council, SAC at IISER Bhopal. |
| 2014-2015 | Co-ordinator, Movie Club at IISER Bhopal. |

Conferences Attended

April 2025	Lean for the Curious Mathematician, ICTS Bengaluru
Feb 2025	New Trends in Teichmüller Theory, ICTS Bengaluru.
Jan 2025	Lean Together 2025, Online.
July 2024	Geometry in Groups, ICTS Bengaluru.
May 2023	1,2,3: Curves, Surfaces and 3-manifolds, Technion Israel Institute of Technology, Haifa, Israel.
Dec 2022	Ergodic Theory and Dynamical Systems, ICTS Bengaluru.
July 2019	Advanced Instructional School in Riemannian Geometry, NCM at IISc Bangalore.
Oct 2017	Regional Workshop on Research and Opportunities, Indian Women in Mathematics (IWM) at IISER Bhopal.
Jan 2015	Indian Science Congress at University of Mumbai.

Specialised Skills

Programming Languages	Python, Mathematica, Haskell (Beginner), Lean (Beginner)
Libraries and Tools	pandas, NumPy, scikit-learn, TensorFlow, Keras, seaborn, matplotlib

Languages

English	fluent (speaking, reading, writing)
Telugu	fluent (speaking, reading, writing)
Hindi	fluent (speaking, reading, writing)
Malayalam	intermediate (reading, writing), fluent (speaking)

References

Prof. Subhojoy Gupta,
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Prof. Kashyap Rajeevsarathy,
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