

# Bijayan Ray

POSTGRADUATE · COMPUTER SCIENCE

Chennai Mathematical Institute, H1, SIPCOT IT Park, Siruseri, Kelambakkam 603103, India

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## Education

### Chennai Mathematical Institute

Chennai, Tamil Nadu, India

#### MSc COMPUTER SCIENCE

2024 - present

Courses:

- Advanced Machine Learning
- Natural Language processing
- Cryptography
- Algorithms for Structured Matrices and Polynomials
- Mathematical Logic
- Applied Machine learning
- Topics in Formal Methods & Machine Learning
- Mathematical Finance
- Randomized Algorithms
- Introduction to Generative AI (half semester course)

### Chennai Mathematical Institute

Chennai, Tamil Nadu, India

#### BSc HONOURS IN MATHEMATICS AND COMPUTER SCIENCE

2021 - 2024

Graduate Courses:

- Computational Complexity Theory
- Algorithmic Coding Theory
- Foundations of Machine Learning
- Quantum Algorithmic Thinking
- Algebra and Computation
- Approximation Algorithms
- Expander Graphs and Applications
- Linear Programming (half semester course)
- Reinforcement Learning

### St. Stephen's School

Dum Dum, Kolkata, West

Bengal, India

ISC BOARDS

2021

## Summer projects

### Chennai Mathematical Institute

Chennai, India

PROFESSOR: PROF. AMIT KUMAR SINHABABU

June, 2024- July, 2024

- Summer project: Computational complexity theory: polynomial interpolation and polynomial shift equivalence testing problems.

### Tata Institute of Fundamental Research

Mumbai, India

PROFESSOR: PROF. ABHISHEK SINHA

June, 2024- July, 2024

- Summer project (online): Theoretical machine learning: static and dynamic regret bound problems in online algorithms.

### Indian Statistical Institute

Kolkata, India

PROFESSOR: PROF. SWAGATAM DAS

June, 2024- July, 2024

- Summer project (online): Topological data analysis: data clustering problem using topological methods.

### Chennai Mathematical Institute

Chennai, India

PROFESSOR: PROF. AMIT KUMAR SINHABABU

June, 2023- July, 2023

- Summer project: Computational complexity theory: polynomial identity testing.

## Reading projects

### Chennai Mathematical Institute

Chennai, India

PROFESSOR: PROF. KRISHNA HANUMANTHU

June, 2023- July, 2023

- Reading project: Algebraic geometry, primarily reading from Robin Hartshorne's textbook. Here is a [link](#) to my presentation on fibred products.

## Indian Institute of Science - Department of Mathematics

PROFESSOR: PROF. MANJUNATH KRISHNAPUR

- Reading project (online): [Topics in Analysis](#).

Bangalore, India

June, 2022- July, 2022

## Programming projects

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### Chennai Mathematical Institute

Chennai, India

COURSE INSTRUCTOR: PROF. K V SUBRAHMANYAM

Spring Semester 2024

- Course project: A Python implementation of a Stock Market Prediction tool based on Deep Q-learning algorithm was done as a group project as part of the Reinforcement Learning course. The details are available on its [Github page](#).

### Chennai Mathematical Institute

Chennai, India

COURSE INSTRUCTORS: PROF. PARTHA MUKHOPADHYAY, DR. KRISHNA V. PALEM

Autumn Semester 2023

- Course project: A Qiskit implementation of Shor's algorithm was done as a group project as part of the Quantum Algorithmic Thinking course. The details are available on its [Github page](#).

## Professional Experience

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- Jan., 2025 - **Teaching Assistant**, for Algebra and Computation course offered by Prof. Amit Kumar Sinhababu and Prof. V. Arvind at Chennai Mathematical Institute (CMI) in Spring semester, 2025.
- present
- Sept., 2024 **Teaching Assistant**, for Algorithmic Coding Theory course offered by Prof. Sumanta Ghosh at Chennai Mathematical Institute (CMI) in Autumn semester, 2024.
- Dec., 2024

## Workshops/Seminars attended

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- 2025 **Complexity Theory Update Meeting**, held at the Institute of Mathematical Science (IMSc.). The details of the workshop are available on its [webpage](#).
- 2025 **Machine Learning and Statistics: From Theory to Practice**, organized by BIRS hosted at the Chennai Mathematical Institute (CMI). The details of the workshop are available on its [webpage](#).
- 2024 **FSTTCS conference**, held at IIT Gandhinagar. The details of the conference are available on its [webpage](#).
- 2024 **Frontiers of Quantum information and Computation workshop**, organized by BIRS hosted at the Chennai Mathematical Institute (CMI). The details of the workshop are available on its [webpage](#).
- 2023 **FSTTCS conference**, held at IIIT Hyderabad. The details of the conference are available on its [webpage](#).
- 2023 **Theoretical Computer Science Winter School**, organized by the CS theory group at IIT Delhi. The details of the winter school are available on its [webpage](#).
- 2022 **Sage Days 114 workshop**, held at the Institute of Mathematical Science (IMSc.). The details of the workshop are available on its [webpage](#).

## Talks and Write-ups

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- A [paper presentation](#) on [fast polynomial factorization paper](#) as part of the Algebra and Computation course at CMI in January-April semester in 2024.
- A [presentation](#) and [report](#) on [noisy interpolating sets](#) as part of the Algorithmic coding theory course at CMI in August-November semester in 2023.
- Talk at [CMI Student Seminar](#) on [Circuit complexity](#) in November 2023.
- Presentation on [Fibred products](#) for reading project on Algebraic geometry at CMI in the summer of 2023.

## Achievements

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- 2024 **IIT-JAM Mathematics All India Rank: 145**, conducted jointly by IISc Bangalore and IITs on behalf of Ministry of Education, Government of India.
- 2024 **Qualified JEST for I-PhD in Theoretical Computer Science with Part A rank: 12**, administered by the Science and Engineering Research Board (SERB), India.
- 2021 **Qualified JEE Advanced**, conducted by IITs under guidance of Joint Admission Board (JAB), India.

## Awards, Fellowships, & Grants

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- 2021 **SHRIRAM Scholarship**, Fee weaver and monthly stipend while studying at Chennai Mathematical Institute.

## Skills

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- Languages **Python, Qiskit, Haskell, Java, HTML, Bash.**
- Tools  **$\text{\LaTeX}$ , Geogebra, Sage Mathematics, Julia (Basics).**