

# Rathindra Nath Karmakar

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## Education

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<b>Kyushu University</b> <i>MEXT Scholar, Research Student</i>	Fukuoka, Japan <i>Ongoing</i>
<b>Indian Statistical Institute</b> <i>M.Math (Honours) – First Division with Distinction</i> • Score: 96.45%	Kolkata, India <i>2024</i>
<b>Indian Statistical Institute</b> <i>B.Math (Honours) – First Division with Distinction</i> • Score: 96.86%	Bangalore, India <i>2022</i>

## Research & Work Experience

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<b>National University of Singapore (NUS)</b> <i>Research Assistant, Department of Mathematics</i> • <b>Project:</b> Maximum Entropy based testing in network models. • <b>Advisor:</b> Prof. Subhroshekhar Ghosh. • Developed a goodness-of-fit test for network models using Jaynes' maximum entropy principle. • Utilized free-energy methods from statistical physics, nonlinear large deviations, and graphon variational principles. • Applied Stein's method for Poisson approximation in the sparse regime. • <b>Output:</b> <a href="https://arxiv.org/abs/2602.20844">arXiv:2602.20844</a> [DOI: 10.48550]	Singapore <i>2024 – 2025</i>
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## Academic Reports

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<b>Recent Advancements in Probabilistic Combinatorics</b> <i>Advisor: Prof. Soumendu Sundar Mukherjee</i> • Conducted an in-depth review of modern techniques in probabilistic combinatorics. • <a href="#">[Link to Report]</a>	ISI Kolkata <i>2023</i>
<b>Modelling Road Traffic Fatalities in India</b> <i>Advisor: Prof. Rituparna Sen</i> • Statistical modeling coursework analyzing fatality trends using R. • <a href="#">[Link to Project Data]</a>	ISI Bangalore <i>2020</i>

## Reading Projects & Seminars

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- **Statistical Optimal Transport (2024-25):** Co-organized reading seminar at NUS with Xiaoyu Dong and Hoang-Son Tran. Covered computational/statistical aspects of OT. [\[Seminar Page\]](#)
- **Modern Discrete Probability (2023):** Directed reading under Prof. Manjunath Krishnapur (IISc Bangalore).
- **Algebraic Topology (2022):** Fundamental Groups and Covering Spaces under Prof. Aniruddha Naolekar (ISI Bangalore).

## Skills & Languages

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- **Technical Stack:** Python (PyTorch, NumPy), R,  $\LaTeX$ .
- **Languages:**
  - **Japanese:** Intermediate – **JLPT N3 Certified** (Score: 138/180, Dec 2024).
  - **English:** Proficient – TOEFL Score: 117/120 (Sep 2023).
  - **Bengali:** Native / **Hindi:** Fluent.

## Honors & Awards

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- **42<sup>nd</sup> Rank** (Nationwide), ISI B.Stat/B.Math Entrance Examination (2019).
- **Sriram Scholarship** offer, Chennai Mathematical Institute (CMI) Entrance (2019).
- **11<sup>th</sup> Rank** (West Bengal), Regional Mathematical Olympiad (2017).
- **1<sup>st</sup> Place**, Bosco Xplore Science Exhibition (Distance measurement using Accelerometer).
- **Academic Excellence:** 98% in ICSE (10<sup>th</sup>, 100% Math) and 95.2% in CBSE (12<sup>th</sup>, 99% Math).