

# Aditya Ghosh

## Curriculum Vitae

Sodepur, Panihati

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## Education

- 2020–present **Masters of Statistics (M.Stat)**, *Indian Statistical Institute (I.S.I.)*, Kolkata, India.  
Scored **94.2%** in the first year.
- 2017–2020 **Bachelor of Statistics (B.Stat)**, *Indian Statistical Institute (I.S.I.)*, Kolkata, India.  
Scored **93.9%** in aggregate.
- 2015–2017 **Higher Secondary (12<sup>th</sup> Grade) Examination**, *Ramakrishna Mission Boys' Home, Higher Secondary School, Rahara*, Kolkata.  
Scored **91%** in aggregate, with 100 in Mathematics and 99 in Statistics.
- 2005–2015 **Secondary (10<sup>th</sup> Grade) Examination**, *Ramakrishna Mission Boys' Home, Higher Secondary School, Rahara*, Kolkata.  
Scored **87.1%** in aggregate, with 100 in Mathematics.

## Academic achievements

- 2021 **ISIAA – Mrs. M.R.Iyer Memorial Gold Medal** for outstanding performance in the B.Stat course at I.S.I., Kolkata.
- 2021 **Nikhilesh Bhattacharyya Memorial Gold Medal** for outstanding performance in *Statistics* in the B.Stat course at I.S.I., Kolkata.
- 2017–2020 Received *prize money* in form of books for performing well throughout the B.Stat course (**topped in the class**) at I.S.I., Kolkata.
- 2019 Selected for the prestigious **Madhava Nurture Camp 2019** at *Chennai Mathematical Institute (C.M.I.)*, Siruseri, Chennai.
- 2018 Selected for the prestigious **Madhava Nurture Camp 2018** at *St. Xavier's College*, Kolkata.
- 2018 Received prizes from I.S.I. for performing well in the **Simon Marais Mathematics Competition 2018**. Scored in the top quartile.
- 2017 Ranked 2<sup>nd</sup> in the B.Stat entrance examination of I.S.I., and also cleared the B.Sc entrance examination of Chennai Mathematical Institute (C.M.I.).
- 2016 Achieved a **certificate of merit** for performing at a promising level in **Indian National Mathematical Olympiad (INMO) 2016**, organized by the NBHM, Govt. of India. This is awarded to the top 75 participants in the country.
- 2016 Selected for **INMO 2016 training camp** at I.S.I., Kolkata.

## Publications

1. Ghosh, A. (2019). An asymptotic formula for the Chebyshev theta function. *Notes on Number Theory and Discrete Mathematics*, 25(4), 1-7.

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## Summer projects

- Summer 2019 **Method of Moments in Probability Theory**, a summer project.  
**Guide:** Prof. Arijit Chakrabarty.  
**Description:** Derived on my own some known results, e.g., Hoeffding's CLT for U-statistics, Wigner's semi-circle law in Random Matrix Theory etc.
- Summer 2019 **Summer Internship in Cryptology**, offered by the *R. C. Bose Centre for Cryptology and Security*, Indian Statistical Institute, Kolkata.  
**Guide:** Prof. Rana Barua.  
**Description:** A reading project on Elliptic Curve Cryptography, Pseudo-random objects (PRPs, PRFs etc.) and Hash functions.
- Winter 2017 An **independent study** on Analytic Number Theory.  
**Description:** Obtained a new asymptotic formula for the Chebyshev  $\vartheta$  function.  
**Status:** Published in a journal. DOI: [10.7546/nntdm.2019.25.4.1-7](https://doi.org/10.7546/nntdm.2019.25.4.1-7)

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## Class projects

- Fall 2020 **On Age-dependent Branching Processes with/without Immigration**, a group project with classmates *Wribhu Banik* and *Shouvik Middey*.  
**Guide:** Prof. Soumendu Sundar Mukherjee  
**Description:** Several aspects of the age-dependent branching processes (ADBP) with or without immigration are reviewed. We present criticisms, accompanied by simulations, to a novel procedure proposed by Hyrien, et al. (2015) to test time-homogeneity of the immigration process of a discretely observed ADBP with immigration.  
**Status:** Submitted a report and gave a presentation based on it, as a part of the Stochastic Processes course in M.Stat 1<sup>st</sup> Year.
- Fall 2020 **Analyzing a Lower Back Pain Data**, a group project with classmates *Anik Burman* and *Soham Das*.  
**Guide:** Prof. Kiranmoy Das  
**Description:** We analyze a dataset on the condition of the lower back pain, collected along with other physical spine details. We aim to identify which of those measurements might be important for predicting whether the pain in a person's lower back is Abnormal, and how to predict it using various regression models.  
**Status:** Submitted a report and gave a presentation based on it, as a part of the Regression Techniques course in M.Stat 1<sup>st</sup> Year.
- Summer 2020 **Finding Anomalies in a Coal Quality data of Coal India Limited**, a group project with classmates *Soham Das* and *Arjama Das*.  
**Guide:** Prof. Debashis Sengupta  
**Description:** We analyze a coal quality data provided by Coal India Limited (CIL). The grade of non-coking coal samples and the values of various quality parameters, determined independently by CIL's laboratory and by designated Third Parties have been reported to vary significantly, which often resulted in loss of revenue for CIL. The data analysis aims to identify the anomalies and the main factors causing them, so as to take appropriate measures.  
**Status:** Submitted a report and gave a presentation based on it, as a part of the Statistics Comprehensive course in B.Stat 3<sup>rd</sup> Year.

Spring 2020 **Typical Distance between Two Randomly Selected Vertices of a Erdős-Rényi Binomial Random Graph**, a joint project with classmate *Sayak Chatterjee*.

**Guide:** Prof. [Antar Bandyopadhyay](#)

**Description:** We study through simulations the typical graph distance between two randomly selected vertices in an Erdős-Rényi binomial random graph, when  $p$  is above the connectivity threshold or in the sparse but super-critical regime. We also study the typical distance in square lattice percolation.

**Status:** Submitted a report and gave a presentation based on it, as a part of the Random Graphs course in B.Stat 3<sup>rd</sup> Year.

Spring 2020 A **Survey** on the impact of lockdown on the academic life of students and research scholars of I.S.I. Kolkata amidst the Covid-19 pandemic, conducted as a part of the Statistics Comprehensive course in B.Stat 3<sup>rd</sup> Year.

Fall 2019 Two projects on applications of linear models: (1) **Map stitching using linear models** and (2) **Shape analysis using linear mixed models**

**Guide:** Prof. [Arnab Chakraborty](#)

**Status:** Submitted two reports, as a part of the Linear Statistical Models course in B.Stat 3<sup>rd</sup> Year.

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## Other presentations/talks

Summer 2021 Gave a talk on **Matching Estimators in Causal Inference** at the *Students' Learning Seminar* at I.S.I., Kolkata

Summer 2020 Presented a paper titled '**What we look at in paintings : a comparison between experienced and inexperienced art viewers**' (Ylitalo, A.K., Särkkä, A., and Guttorp, P. (2016). *Ann. Appl. Stat.* 10 (2) 549 - 574), as a part of the Statistics Comprehensive course in B.Stat 3<sup>rd</sup> Year.

Fall 2019 Presented a topic on **Population Census of India, 2011** at the *Sampling and Official Statistics Unit*, I.S.I., Kolkata.

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## Technical skills

R, C,  $\text{\LaTeX}$ , GeoGebra, HTML, MS-Office.

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## Other information

Languages Bengali (mother tongue), English (fluent) and Hindi (conversational).

Teaching Trained a number of students for Mathematical Olympiads and the entrance examinations of I.S.I., C.M.I., and other colleges.

Hobbies and interests

- Maintaining a personal blog ([ghoshadi.wordpress.com](http://ghoshadi.wordpress.com))
- Spending time in the library
- Love to watch movies

*I hereby declare that all the information provided above are true to the best of my knowledge.*

*Aditya Ghosh.*