Mriganka Basu Roy Chowdhury

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Education

University of California at Berkeley — Berkeley, California
Ph.D. in Statistics — Fall 2021 –

- Working in probability, particularly in spin systems, random graphs and line ensembles. **Current GPA:** 4.0

Indian Institute of Technology, Guwahati — Guwahati, Assam, India
B.Tech. in Mathematics and Computing, **GPA:** 9.96/10 — 2017−2021

Research

Regular subgraph counts in sparse Erdős–Rényi graphs — Berkeley, CA
https://arxiv.org/abs/2304.01162 — 2022-23

- Tail behavior of triangle counts in sparse ($p_n = c/n$) Erdős–Rényi graphs have been the focus of a lot of recent activity.
- My paper extends these achievements to the case of arbitrary regular graphs (for the appropriate choice of p_n), using several novel techniques which completely bypass the need for special properties satisfied by the triangle.

Extremal Gibbs states for area tilted Brownian lines (tentative) — Berkeley, CA
Manuscript in preparation, joint work with: **Shirshendu Ganguly, Pietro Caputo** — 2023

- The famous Ferrari-Spohn diffusion was the only known example of area-tilted Brownian-Gibbs measures.
- We show that in fact there are infinitely many such measures, and produce a very precise classification of all such measures, combining geometric and probabilistic arguments. The result is also extended to infinite line ensembles with the area-tilted property.

Academic Achievements

- Received the **President of India Gold Medal**, which is awarded to the student with the highest cumulative grade point (CGPA) amongst all students graduating that year from all departments with the degree of Bachelor of Technology or Bachelor of Design.
- Selected to represent IIT Guwahati at the **44th ICPC World Finals** held in Moscow, Russia (ICPC 2019-2020), team **I_See_AC**. **Rank 6** in online round, **3** in Kanpur regionals, **5** in Amritapuri regionals in India.
- Cleared the **Indian National Mathematical Olympiad** (invited for the IMO Training Camp, ∼ 35 students are selected each year across classes 8-12) in **2015**.
- Ranked **64**th in **Asia-Pacific Informatics Olympiad** in **2015 (Bronze Medal)**.
- Cleared the **Indian National Olympiad in Informatics** (invited for the IOI Training Camp, ∼ 35 students are selected each year across classes 8-12) in **2014, 2015, 2016**.
- Ranked **345** (out of ∼ 1.3 million) in **JEE Mains, 2017** (All India Engineering Entrance Examination), and **1012** (out of ∼ 0.22 million) in **JEE Advanced, 2017** (next stage after JEE Mains, all India entrance examination for the IITs).

Professional Work

Sprinklr — Work from Home
Product Engineering Intern — Summer 2020

- Developed algorithms for auto-completion and phrase prediction, using ideas from linguistics. My implementation has been deployed by the company for real-time usage. **Github:** https://github.com/mbrc12/auto-suggest/

Google Summer of Code *with* **Typelead**   Remote

Intern   Summer 2018

– Developed and implemented algorithms in Haskell to analyze real-world code and predict functional purity / nullability properties using smart heuristics and control-flow analysis. **Github:** https://github.com/mbrc12/etanol/

OTHER ACHIEVEMENTS

- Ranked **287** in **Round 2** of **Google CodeJam (2019)**, an annual global algorithmic competition organized by Google. Ranked **423** in **Round 3** in **2018**.

- Ranked **15** and **1** (globally) in **Microsoft Q# Contest** (finals and warmup, respectively), a **Quantum Computing** competition. See https://codeforces.com/contest/1002/standings and https://codeforces.com/contest/1001/standings. Username: **mbrc**

- Ranked **8**th in **Codechef Snackdown 2015** (an annual algorithmic competition organized by Codechef), among both highschool and college participants, and selected to appear for the **Snackdown World Finals**.