Sagnik Dey

3rd Year Undergraduate
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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2017 - Present	B.S	Indian Institute of Technology, Kanpur	8.66/10
2017	CBSE(XII)	Delhi Public School, Navi Mumbai	93.8%
2015	CBSE(X)	Delhi Public School, Navi Mumbai	9.8

Scholastic Achievements

- Granted a branch change to Mathematics department on the basis of academic performance.
- Among **15 students** selected out of 400+ for **Advanced Track Course** in ESC101 course for **C programming**.
- Secured **All India Rank 2549** in **JEE Advanced 2017** among the 1.7 Lakh shortlisted candidates.
- Secured **All India Rank 989** in **JEE Mains 2017** among the 12 Lakh candidates.

Work Experience

- **Google Summer of Code Participant** (*May'19 - Ongoing*)
  Organization: Boost C++
  - Changed the number base used internally from decimal to INT_MAX for optimal space usage when storing numbers as vectors of digits. Redesigned all tests to better address the library functionality after internal representation changes.
  - Added templating to the entire library to enable custom variable type for internal real number representation.
  - Adding Karatsuba Multiplication function currently for numbers represented in base INT_MAX.
  - Contributed towards several bug fixes in adding division operation to the library.
  - Added user defined literal functionality for declaring objects of type Boost.Real.
- **Full Time Development Intern, IITK NYC Office** (*May'18 - July'18*)
  Mentor: Prof. Manindra Agrawal, Department of Computer and Science and Engineering.
  - Worked on the backend of a scalable web application using Scala language with Akka http library.
  - Led a team of 4 members during the course of the internship.

Projects

- **Low Rank Matrix Approximations and Algorithms** (*May'19 - June'19*)
  Mentor: Sumit Ganguly, Department of Computer and Science and Engineering.
  - Implemented **length squared sampling based** matrix multiplication.
  - Implemented **CUR method** for matrix sketching.
  - Implemented **low rank approximation** of matrix using sampling algorithms.
- **Personal Audio** (*Dec'18 - Ongoing*)
  Mentor: Rajesh M. Hegde, Department of Electrical Engineering
  - Implemented a generalized **Kalman Filter** for the estimation of channel response in dynamic scenarios.
  - Implemented **BACC** approach to estimate inverse filters for personalized audio zone creation.
- **Scrabble Game** (*Jan'18 - April'18*)
  Project under **Advanced Track** for **ESC101** course
  - Implemented GUI based scrabble game.
  - Algorithmic computer player of three difficulties with greedy selection of current best word.

Technical Skills

- **Programming Languages:** C, C++, Java, Scala
- **Other Skills:** git, Phabricator, LaTeX

Extra - Curriculars

- **Secretary at Book Club, IIT Kanpur**

Relevant Courses

Introduction to Programming	Probability and Statistics
Data Structures and Algorithms	Real Analysis
Linear Algebra	Set Theory and Logic
Introduction to Electronics	Machine Learning (online course on Coursera)