# Raktim Mitra

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## Personal Statement:

A science enthusiast with deep interest for physics, maths , biology and computer sciencestudying at Indian Institute of Technology , Kanpur . My primary interests are QuantumComputing, Bioinformatics, Software Developement and Relativity . I am also in love with football, painting and music .

## Educational Qualifications:

| Year | Degree | Institute | CPI/% |
|---|---|---|---|
| 2019(expected) | B.Tech,Computer Science and Engineering | Indian Institute of Technology,Kanpur | 9.8/10 |
| 2015 | Higher Secondary Exam(WBCHSE) | Ramakrishna Mission Vidyalaya,Narendrapur | 97.2% |
| 2013 | Madhyamik Examination(10th,WB board) | Ramakrishna Mission Vidyalaya,Narendrapur | 95.6% |

## Academic Achievements:

↗Secured **All India Rank - 172** in **JEE-Advanced 2015** amongst 1,50,000 candidates.

↗ Secured **All India Rank - 310** in **JEE-Mains 2015.**

↗ Secured **All India Rank-2** in West Bengal Joint Entrance Examination in Engineering(2015).

↗ Secured **All India Rank-16**  in West Bengal Joint Entrance Examination in Medical(2015).

↗Recipient of **Kishore Vaigyanik Protsahan Yojana Scholarship**-2013 (with all india Rank 190)

↗Participated in VIJYOSHI(VIgyan Jyoti Shibir) camp as a KVPY fellow in November 2014 at science city Kolkata .

↗Selected in the **top 1%** (top 300) in National Standard Examination in Physics and in **top 10%** in Chemistry (NSEP, NSEC) conducted by **IAPT**(2014).

↪Participated in Indian National Physics Olympiad and Indian National Chemistry Olympiad (**INPhO,INChO 2014-2015**)

↪ 2nd in Kolkata Zone in IGNITE talent search by VIT in association with Times of India .(2013)

↪Participated in Metal Quiz organised by Indian Institute of Metallurgy at Jadavpur University .(2013)

↪DST-Inspire internship science camp at Jagadish Bose National Science Talent Search,Kolkata.(2013)

# Awards:

- **Mamraj Agarwal Rashtriya Puraskar** given Governor, West Bengal Sri Keshari Nath Tripathi .(for securing 5th state rank in Higher Secondary examination .)
- **Felicitation by Chief Minister,West Bengal Srimati Mamta Banerjee** for securing 5th state rank in higher secondary examination .

# Technical Proficiency:

C, JAVA, HTML/CSS, Bash, XML, Git, Android Studio, C++, Material Design, Solidworks, Python, Arduino, ROS, Inkspace, Gazebo, OpenCV, Vim, SQLite3, Gnuplot, R,
Octave, Xilinx Webpack Software, MIPS assembly language , Hardware description language Verilog, Latex , PowerPoint .

# Projects:

↪**Quantum Computation (quantum postulates, algorithms, query complexity)**
**Mentored by: Prof.Rajat Mittal**
**from(Nov'16 - ..ongoing)**
Studying quantum algorithms , lower and upper bounding methods to query complexity of quantum black-box algorithms and working on relevant problems .

↪**Course Project (TA202) Manufacturing Processes-II :**
Design and fabrication of a working "Juicer" using piston and gear assembly. Works involved Milling, Turning using Lathe , Drilling and Fitting .

↪**Course project (CS201) on Discrete Geometry: Sylvester-Gallai theorem and its implications.**

The reading project consisted of studying sylvester-gallai theorem and its proofs and implications and concept of Real Projective Plane .
**Link to presentation slides**

↪**Course project (TA201) Manufacturing processes-I :**

Design and fabrication of a working **Goods-Keeper with** idea derived from "London-eye" .
As technical director of the group works involved design and drawing and coordinating the manufacturing process and also helping in marketing , costing and business plan building.

↪ **Android App with SQLite database on Birds Of IIT Kanpur "Aves@IITK"(May'16 - June'16)**
**Mentored by: Prof. T V Prabhakar**
Made an app for birdwatchers with android-studio and mySQL with almost 100 Birds, Images of them along with description separated categorywise .
The data is thanks to Mr. Vikram Grewal .
**View code on github or download the app**

↪ **ACA semester project**(Association of Coding Activity,CSE department ,IIT Kanpur, Feb'16 to APril '16):*Mentored by*: Mohit Kumar Garg (IIT Kanpur graduate from cse department(2016))
*"Android App development for text extraction from image"* (team of 4 students)

We used tesseract library and built it with gradle into android studio . The app enabled users to capture a photo and english text were recognised, extracted and displayed after processing the image. **Video (code on github)**

↪ part of **Autonomous Underwater Vehicle** Project('VARUN', under **Robotics Club,IIT Kanpur** ) from October '15 to April '16.Works involved using OpenCV with ROS , Mechanical design of AUV in solidworks, waterproof connector design, Arduino with ROS.
**Documentation made on Git during the project**

# Mentoring/Teaching experience:

↪**ACA semester project(**Association of Coding Activity,CSE department ,IIT Kanpur, Jan'17 to ongoing)
Mentored 6 students in their android development project .
↪Have taken remedial classes to to help academically needy students in phy103 course .

# Hackathons:

➷Participated in Google DevFest organised by Google Developer Group, IIT Kanpur in association with E-Cell and won the prize of completion by building a commercial app to facilitate local worker and customer connection along with comprehensive business plan .

# Online Courses:

- **Finding Hidden Messages in DNA (Bioinformatics I) by University of California, San Diego on Coursera. <u>Certificate</u> earned on January 30, 2017**

**Audited the course titled "<u>HTML, CSS, and Javascript for Web Developers</u>" by Johns <u>Hopkins University</u> on coursera.org .**

# Communication Skills:

- Native Languages known : Hindi,Bengali and Sanskrit .

Foreign Languages : English(proficient) , French(level-I, course ongoing, academic year 2016-17 )

# Positions of Responsibility:

- **Student Guide (Counselling Service, IIT Kanpur):** Helped new students to mingle with their new college life and acted as a link between students and counselling service to keep an eye on overall emotional and mental well-being of new students at IIT Kanpur .
- **Academic Mentor(Counselling Service , IIT Kanpur)(course PHY103 : Introduction to Electrodynamics):** Under the agenda of Counselling Service, IITK helping needy students in the mentioned course and taking Remedial Classes as arranged by counselling service,IITK .

# Volunteer Experience:

- **CSAW'16 IITK :**

Volunteered to ensure smooth conduction of Cyber Security Awareness Camp hosted by IIT Kanpur in November 2016 **.**

- **Antaragni'16 volunteer , Fine Arts Events :**

Volunteered to ensure smooth conduction of fine arts events in Antaragni 2016.

# Extracurricular Activities:

- Secretary at Association of Coding Activities, CSE Dept. , IIT Kanpur.

- **Galaxy'17(Feb,2017):** Coordinated and participated in Fine Arts Events from Mughals pool .

**Antaragni 2017 :** Oil Painting featured in Antaragni fine arts exhibition .

**Secretary(Fine Arts Club, Student Gymkhana, IITK):** Took up the duty of secretary of fine arts club and helped in conducting fine arts events in **Freshers'2016 .**

**Oil Painting in canvas as Summer Project under fine arts club iitk .**

**Galaxy'16**(Feb,2016): Participated in Fine Arts Events from Mughals pool to go on to win Overall Fine Arts Trophy .

**Freshers' Inferno'15:** Won football tournament as a part of the football team . Came 2nd in carom tournament from mughals pool .

**Musicals in Freshers'15 IIT Kanpur with Music Club , Students' Gymkhana:** Participated in the Old Hindi Songs Medley as a vocal artist . Also have got skills in Harmonium.

# Relevant Coursework:

- **Real analysis and multivariate calculus mth101**

**Linear Algebra and differential Equation mth201**
**Data Structures and Algorithms eso207 (ongoing)**
**Computer Organization cs220(ongoing)**
**Probability and Statistics mso201(ongoing)**
**Abstract Algebra cs203**
**Discrete Mathematics cs201**
**Quantum Mechanics - I pso201**
**Introduction to Electrodynamics phy103**
**Introduction to Psychology psy151**
**Language and Society eng124**
**Principles of Biotechnology lif101**
**Computing Laboratory cs251(ongoing)**
**Communication Skills com200**