

# Asish Kumar Mandoi

Junior Undergraduate

Electrical Engineering

Indian Institute of Technology Kanpur

 Homepage

 Asish Mandoi

 AsishMandoi

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## EDUCATION

- 2019 – 2023 **Bachelor of Technology in Electrical Engineering**, *CPI: 7.5/10.0*  
Indian Institute of Technology Kanpur, India
- 2019 **Grade XII (CBSE Board)**, *Cumulative Percentage: 93.8%*  
MBS Public School, Bhubaneswar, India
- 2017 **Grade X (CBSE Board)**, *CGPA: 10.0/10.0*  
DAV Public School, Bhubaneswar, India

## ACHIEVEMENTS & HONOURS





### Programming Achievements

- 2021 **IBM Quantum Challenge, Fall 2021**  
*Badge*  Among **677 worldwide** to complete the 10 day challenge by solving problems in areas of finance, natural sciences, machine learning and optimization using **Quantum Computing**
- 2020, 2021 **Google Kickstart**  
Globally ranked **1636** in Round E 2021, **1055** in Round D 2021, and **976** in Round H 2020
- 2020, 2021 **Facebook Hacker Cup**  
Globally ranked **1967** in Round-1 2021 and **2769** in Round-1 2020

### Scholastic Achievements

- 2019 **All India Rank 3592**, in **JEE-Advanced** out of 220,000+ shortlisted candidates
- 2019 **All India Rank 7480**, in **JEE-Main** out of 0.9 million+ candidates
- 2019 **National Top 300**, to be selected for **Indian National Chemistry Olympiad**, HBCSE
- 2017 **All India Rank 322**, in **KVPY** out of 50,000+ candidates and selected for **KVPY Fellowship** by Govt. of India, and IISc Bangalore

## PROJECTS & EXPERIENCES

- Oct '21 – Present **Quantum Computing Mentorship Program**  
*QOSF*  *Quantum Open Source Foundation, Mentor: Dr. Vesselin G. Gueorguiev*
- Among **~40 out of 1000+** to be selected for the program for solving an assessment task innovatively
  - Recognized for developing **one of the best solutions** out of all submissions by implementing **Quantum Search on Unstructured Data** using quantum input loading and **Grover's algorithm**
  - Implemented solvers to find optimal solutions for the **Travelling Salesman Problem** and the **Vehicle Routing Problem (VRP)** using **Quantum Annealing**
  - Compared the runtimes and accuracies of various optimization algorithms run on **Quantum Computers** (of fundamentally different architectures) as offered by **IBM** and **DWave**
  - Presented my work on **clustering** and non-clustering based approaches to solve VRPs to guests like **Pawel Gora** 
- May '21 – Jul '21 **IITK-Coin**  
*GitHub*  *Backend of a pseudo-currency system to be used in the IITK campus | Programming Club, IIT Kanpur*
- Developed the **backend** from the ground up using **Golang** and **SQLite**
  - Secured the endpoints by incorporating user authorization using **JWTs**
  - Built an **additional layer of protection against hacks** by employing the **Bcrypt** algorithm to **hash and salt passwords**
  - Added a **transaction tracking** functionality for administrators and implemented an **OTP based confirmation system**
  - Increased server efficiency by handling up to **300 concurrent transactions per second** by utilizing the **WAL journal mode** in **SQLite** and **Redis** for caching
  - Containerized the application using **Docker** and made it **publicly accessible** on DockerHub
- DockerHub* 

- Jan '21 – Feb '21 **Crio Winter of Doing**  
*CWoD* [↗](#) *Externship program for developers | Crio.Do*
- Acquired familiarity in **HTTP, REST API, AWS, Linux, Git, HTML, CSS, JavaScript** by implementing related concepts
  - **Launched an instance of Amazon EC2**, deployed the backend server of the QEats (dummy) android app, and connected the app to its backend server
  - Sorted cities based on the popularity of the QEats android app by **analyzing 10k+ logs** using **Linux shell techniques**
  - Deployed the frontend and the backend of my **Personal Portfolio** [↗](#) web application
  - Integrated my **GitHub** account with this application enabling it to fetch repository descriptions in **real-time**
  - Among the **final 1200 out of 10,000+** total applicants to clear the coding round and reach **Stage-2B**
- Apr '21 – Jun '21 **Algorithms based on Maths**  
*Stamatics, IIT Kanpur*
- Implemented and applied algorithms like prime factorization, factorial calculation, and **polynomial hashing** in C++
  - Improved proficiency in **developing optimal approaches** to solve **mathematical programming** problems by actively participating in **competitive-programming contests**
- Jun '21 - Jul '21 **Edison Tinfoil Phonograph**  
*Course Project, Advisors: Prof. Anish Upadhyaya, Prof. Shashank Shekhar*
- Collaborated with a **team of ten** students and worked on a semester-long project on manufacturing The Phonograph
  - **Designed CAD models** of sophisticated components and assemblies of the phonograph using AutoCAD
  - **Proposed optimal and cost-effective processing techniques** to be used in the manufacturing of the individual components of the device
  - **Presented** the work of the team before the professor and discussed improvements
- May '20 – Jul '20 **String Theory for Beginners**  
*Final Report* [↗](#) *Science Coffee House IITK* [↗](#), *Mentor: Gurmeet Singh, Ph.D. student at IIT Kanpur*
- Acquired a qualitative understanding of early modern physics and **String Theory** by doing a thorough study of the book - *String Theory for Dummies* by Andrew Z. Jones
  - Performed research on exciting scientific topics like **blackhole kinematics** [↗](#)
  - **Contributed to the final report** for the project describing String Theory in brief
- Jan '20 – Jul '20 **Data Structures and Abstract Data Types**  
*Association of Computing Activities, IIT Kanpur*
- Solved **200+** programming questions by applying data structures like sets, maps, stacks, queues, from the **C++ STL**
  - Participated in **50+** programming contests and improved Codeforces rating by **~500**

## TECHNICAL SKILLS

<b>Languages</b>	C, C++, Python, Go, MATLAB, JavaScript
<b>Web</b>	Node.js, Express, Next.js, HTML, CSS, PHP, MySQL, SQLite, Redis
<b>Libraries</b>	Qiskit, NumPy
<b>Utilities</b>	Linux shell utilities, Git, Docker, $\text{\LaTeX}$

## RELEVANT COURSEWORK

<b>Computing</b>	Quantum Computing <sup>[i]</sup> , Data Structures and Algorithms <sup>[i]</sup> , Fundamentals of Computing
<b>Electrical Core</b>	Digital Control, Digital Electronics, Microelectronics, Principles of Communications
<b>Other</b>	Probability and Statistics, Intro to Machine Learning <sup>[i]</sup> <a href="#">↗</a> , Language and Society

[i]: informal, [hyperlinked at appropriate places]