

# Rohit Ranjan

JUNIOR UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING  
INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

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## Educational Qualifications

Year	Degree	Institution	CGPA/%
July'18 – May'22(Expected)	B.Tech, CSE	Indian Institute of Technology, Kanpur	9.3/10.0
2018	CBSE – XII	Krishna Public School, Patna	92.0%
2016	CBSE – X	Jawahar Navodaya Vidyalaya, Saran	10.0/10.0

## Awards & Achievements

2019	<b>Academic Excellence Award</b> , amongst Top 6% students of the department	IIT Kanpur
2018	<b>Academic Excellence Award</b> , given to Top 10% of the batch	IIT Kanpur
2018	<b>All India Rank 367</b> , Joint Entrance Examination Mains among 1.5 million candidates	India
2019	<b>Samsung Star Scholar</b> , awarded to students graduated from J.N.V performing academically well in IITs	Samsung, India
2019	<b>All India Rank 1</b> , Indian Engineering Olympiad	Gateforum, India
2019	<b>Google foo-bar challenge</b> , Completed 3 out of 5 levels	Google
2020	<b>Six Star Badge</b> , for scoring more than 3000 points in problem solving skill	Hackerrank
2020	<b>Three star Rated</b> , with rating more than 1700	Codechef

## Work Experience

### IITK - Summer Of Code

IIT Kanpur

FULL STACK DEVELOPER INTERN, UNDER PROF. SANDEEP SHUKLA

April 2019 - June 2020

- Developed a dynamic and scalable web application using **Django** framework from scratch as an initiative to support various NGOs of India by keeping track of records of users and their donation history.
- Implemented various functionalities that allows registered users to choose from various NGOs to donate, as well as the registered NGOs to list their mission and necessities.
- Developed whole Backend system using **Django** and **Django-REST**, used **ReactJS** to develop Frontend.
- Established a Payment Portal to handle all type of transactions using **Paytm API**.

### Boost C++ Organization

Boost.Astronomy, GitHub

SOFTWARE DEVELOPER, BOOST.ASTRONOMY

March 2020 - Present

- Implemented Various Arithmetic Operations(e.g Cross Product, Dot Product, Inter-transformations) for the existing Astronomical Coordinate system using **Boost::Geometry** and **Boost::Units** library.
- Restructured Base class of the existing Coordinate System to support Inter-Comparisons and added tests for differential coordinates to provide a robust astronomical coordinate system.
- Used **Template Meta Programming** in C++ to provide almost no run-time overhead and allow users to write scientifically infallible code by detecting all errors at the compile time.

## Skills

<b>Programming</b>	C/C++, Python, Haskell, Bash Scripting, Verilog
<b>Web</b>	HTML5, CSS, Javascript, SQL, React Native
<b>Utilities/Platform</b>	Linux Shell Utilities, Git, Vim, Matlab, Octave, LaTeX
<b>Libraries</b>	Numpy, Matplotlib, Pandas, TensorFlow, Scipy

## Relevant Courses

Introduction to Programming	Linear Algebra	Introduction to Logic
Discrete Mathematics	Data Structures and Algorithms	Software Development & operations
Computer Organization	Modern Cryptology	Computational Methods in Engineering

## Projects

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### 5G/6G Development

PROF. ADITYA K. JAGANNATHAM, DEPT. OF ELECTRICAL ENGINEERING

IIT Kanpur

July 2020 - Present

- Analysed various aspects of the existing wireless technology including **2G, 3G, 4G** and upcoming **5G** technology & it's embedded technologies like **MIMO, OFDM** and **CDMA**.
- Designed models to differentiate foreground and background in the cheetah image problem using **Bayesian decision theory, Bayesian Classifiers** and **Bayesian Parameter estimation**.
- Used MATLAB machine learning toolbox, SciPy, NumPy, Matplotlib to develop above models and analyse their accuracy.

### Caves Game

COURSE PROJECT, PROF. MANINDRA AGRAWAL

IIT Kanpur

January 2020

- Explored and Analysed different Existing Encryption & Decryption system(including **DES**(Data Encryption Standard), **AES**( Advanced Encrytpion Standard), **RSA** (Rivest, Shamir, Adleman)) and implemented these.
- Completed all **7** levels of the Caves Game using these encryption and decryption system. Made use of these encryption and decryption systems to extract the key and unlock the subsequent levels of the game.

### Life@IITK

PROGRAMMING CLUB, SCIENCE & TECHNOLOGY COUNCIL, IIT KANPUR

IIT Kanpur

June 2019

- Collaborated with application developers team to create a web application which streamlines the various aspects of the day-to-day lives of campus students.
- Worked with frontend team to design a Map Page using **ReactJS** showing ongoing events in IITK with pinned location on map according to building or place where events are going to happen.
- Also assisted backend team to establish data tables of users and events & create relations between these. Used **Django-REST** to create a **Rest Api** which helps in serialization of events data.

### P2P Video Conferencing App

ASSOCIATION FOR COMPUTING ACTIVITIES, DEPARTMENT OF CSE, IIT KANPUR

IIT Kanpur

Jan 2019 - March 2019

- Designed a basic web application which connects multiple registered users and allows them to communicate between each other via text messages, voice call, One to One Video Call or via Video Conferencing.
- Used **Python-Flask framework** to handle all backend necessary processes and methods(e.g **User Registration, Sign In, Sign Off..** ).
- Used a Javascript open framework named **WebRTC** to establish real-time communication between peers and enabling them to talk seamlessly.

## Mini/Self Projects

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#### PolySAT

Implemented a SAT solver for propositional logic using the DPLL Algorithm in C++.

#### FlappyBirdAI

Created a FlappyBird AI model using NEAT Algorithm.

#### ChessPy

Created a very simple chess engine using Python.

#### StudentDATA

Developed a system to handle student database in C++ using SQL Database.

#### Decoder

Developed a decoder in Haskell to decipher monoalphabetic substitution ciphers.

## Miscellaneous

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- Mentored **8** students in ACA project **FlappyBirdAI using NEAT** organized by Dept. of Computer Science & Engineering
- **Senior Marketing Executive** in Udghosh'19, IIT Kanpur
  - Contacted various sponsors and convinced them to sponsor our college sports festival.
- **Senior Web Executive** in Udghosh'19, IIT Kanpur
  - Assisted in smooth functioning of website, uploaded all statistics of match results during fest
  - Collaborated with web-cell members in smooth conduction of online sports quiz during event **NOSSQ** in Udghosh'19.
  - Designed website and registration portal for Udghosh where almost 3000 users registered
- Received First Prize, National Level Chess Championship