

Pursuing **Honors** in Computer Science and Engineering

## SCHOLASTIC ACHIEVEMENTS

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- Secured **All India Rank 180** in **JEE Advanced** out of 250,000 candidates (2017)
- Secured **All India Rank 780** in **JEE Main** out of 1.7 million candidates (2017)
- Received membership of **Mensa International** and **The International High IQ Society** (2016)
- Recipient of the **KVPY**(Kishore Vaigyanik Protsahan Yojna ) fellowship by Govt. of India (2015)
- Amongst the **1000** students to be awarded the **NTSE** scholarship by N.C.E.R.T (2015)
- Awarded certificate of merit for being among the **State Top 1%** in **NSEC** (2016)

## INTERNSHIP

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### De Novo Protein Contact Map Prediction

Summer 2019

Guide: Prof. Martin Lercher

HHU Dusseldorf

- Prepared various models to predict protein contact maps - first step for **protein folding problem**
- Used **Multiple Sequence Alignment**(MSA) to predict contact maps for proteins of globin family
- Implemented another approach in which first used **neural networks** to predict short-range contacts and medium-range contacts which can be used further to predict complete contact map
- Achieved **65%** train accuracy and **63%** test accuracy on dataset of **33,000** protein subsequence

## KEY PROJECTS

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### ChordIt: Chord Extraction from Audio File

Summer 2018

Institute Technical Summer Project

IIT Bombay

- Analyzed various configurations of Feed Forward Neural Network and selected **Two Layer ANN**
- Used optimized routines of **Fourier Transform** to extract **12 dimensional PCP vector**
- Achieved **95%** training accuracy and **86%** test accuracy on dataset of 2000 chords
- On real-time data the model based on **SGD Optimizer** outperforms the previous model

### Secure Personal Cloud

Autumn 2018

Guide: Prof. Soumen Chakrabarti | Course Project

IIT Bombay

- Implemented a **Cloud Based File System** where multiple clients can upload and share files
- Used **Django** for building the backend of website and designed web client using **NodeJS**
- Designed **daemon process** to provide **real-time synchronization** across all devices of user
- Implemented **block-level file encryption** on server to provide more-secure interface to user

### Rubik's Cube Solver

Spring 2018

Guide: Prof. Amitabha Sanyal | Course Project

IIT Bombay

- Developed a program to find out a solution to the **Rubik's Cube Puzzle**
- Thoroughly read about **macros** and implemented them to improve the time complexity of code
- Implemented **First 2 Layers(F2L)** algorithm to solve the puzzle which gives solution in **<1 second**

### GOST R Block Cipher

Spring 2018

Guide: Prof. Bernard Menezes | Course Project

IIT Bombay

- Developed a python module which encrypted input-message into 512-bit hash string
- Read about rebound attack to find collision pair: Match-in-the-middle with greater number of degree of freedom more suitable approach for inbound phase while probabilistic approach for outbound phase

### Contention Resolution and Switching

Spring 2019

Guide: Prof. Ashwin Gumaste | Course Project

IIT Bombay

- Implemented the iSlip algorithm for arbitration in VHDL, achieving end-to-end latency of 6 clock cycles/packet
- Designed an FSM for the algorithms and test-bench to benchmark performance of the arbiter on 128-bit packets

## Improvised MineSweeper

Guide: Prof. Amitabha Sanyal | Course Project

Spring 2018

IIT Bombay

- Developed the game Minesweeper through **event-driven programming**
- Devised a way to place mines so the user *never hit a mine* on the very first move
- Used **Scheme Macros** for various loop structures and key steps in the project

## OTHER PROJECTS

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### XSS Attack Blocker Extension

Guide: Prof. Bernard Menezes | Course Project

Spring 2019

IIT Bombay

- Developed Google Chrome extension using WebRequest and WebRequestBlocking APIs which prevents XSS script attack injected through POST or GET request

### Email Client

Guide: Prof. Kameswari Chebrolu | Course Project

Spring 2018

IIT Bombay

- Designed a simplified PoP3 email protocol supporting multiple clients using socket programming and tested file transfer between client and server using TCP and UDP sockets through query by client

## TECHNICAL SKILLS

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### Programming Development Software

C, C++, C#, Python, Java, Bash, Racket, Clingo  
HTML, CSS, PHP, Bootstrap, JavaScript, Android Studio, Arduino, NodeJS  
MATLAB, MediaWiki, Gnuplot, Git, Latex, AutoCAD, SOLIDWORKS

## POSITIONS OF RESPONSIBILITY

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### Manager, Analytics Club

Institute UG Academic Council

April 2019 - Present

IIT Bombay

- Head of a two-tier team responsible for organizing 10+ data analytics lectures and workshops at IIT Bombay
- Conducted 'Summer Bootcamp' on 'Game Theory and Strategic Thinking' to provide exposure to students
- Ideating the first online bootcamp on python development, and other bootcamps on placement preparation

### Department Academic Mentor

Computer Science and Engineering Department

April 2019 - Present

IIT Bombay

- Mentor to 6 sophomores for their academic and general concerns, and helping them cope with the curriculum

### Coordinator, Mood Indigo | Department Informals

IIT Bombay

April 2018 - December 2019

- Organised Flagship Events and Quiz Competitions with a cumulative attendance of **1200+**.
- Enhanced experience of **100,000+** visitors by assembling lounges strategically placed in **550+ acres**.
- Spearheaded negotiations with artists and vendors to curate unique events in the festival

### Web Convenor

Institute UG Academic Council

July 2018 - April 2019

IIT Bombay

- Revamped the UGAC Web page which has almost **18,000+ hits** catering to **4000+ UG students**
- Reconstructed the website of **Learners Space 2018** using **CSS, HTML** and **JavaScript**

### POSH (Prevention Of Sexual Harassment) Volunteer

IIT Bombay's Women Cell

April 2018 - April 2019

- Termed as '**Champion**' to sensitize the community on gender issue
- Conducted events in campus to spread awareness with cumulative attendance of **400+ students**

## COURSES UNDERTAKEN

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### Computer Science

Data Structures and Algorithms, Artificial Intelligence and Machine Learning, Operating Systems, Computer Data Analysis and Interpretation, Advanced Network Security and Cryptography, Software Systems Lab, Discrete Structures, Design and Analysis of Algorithms, Computer Networks, Abstractions and Paradigms in Programming

### Others

Introduction to Electrical and Electronics Circuits, Quantum Physics and Application, Sociology, Basics of Electricity and Magnetism, Engineering Graphics and Drawing

## EXTRACURRICULARS

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- Bagged **1st position** consecutive two times in **StrataZenith** conducted in **Techfest 2017, 18** (2017, 2018)
- Tutored a class of 40 students as a part of **National Service Scheme** (2017-2018)
- **One of 10 students** from India shortlisted for **Professor Harry Messel ISS 2017, Sydney** (2017)
- Attended **Vijyoshi Camp** which is an interactive students and researchers forum (2016)
- Attended **Annual Training Camp** by National Cadet Corps to inculcate Defence Services work ethos (2015)