



**Prajeeth**  
**Computer Science & Engineering**  
**Indian Institute of Technology Bombay**

**190050117**  
**B.Tech.**  
**Gender: Male**  
**DOB: 8/28/2001**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	
Intermediate	CBSE	Maharishi Vidya Mandir, Chennai	2019	97.60%
Matriculation	CBSE	Maharishi Vidya Mandir, Chennai	2017	95.00%

Pursuing Minor in Data Science and Machine Learning and Honors in Computer Science

## SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 33** in **JEE Advanced** among 245,000 aspirants (2019)
- Achieved **99.98 percentile** in **JEE Mains** among 1.2 million aspirants (2019)
- Secured **AP grade** in Calculus and Physical Chemistry courses for exceptional performances (2019)
- Awarded the prestigious **KVPY** Fellowship by DST, Govt. of India with **All India Rank 32** (2018)
- Awarded National Talent Search Examination (**NTSE**) scholarship by NCERT, Govt. of India (2017)

## OLYMPIADS

- Awarded **Gold Medal** by HBCSE for being among the top **0.1%** students in the **INChO** (2017, 2019)
- Represented IIT Bombay in **InCTF**(Indian national CTF) Finals in the university category (2021)
- Secured a rank of 1,490 in **Google Code Jam Round 2** among 30000 students. (2021)
- Expert** in **Codeforces** with a rating of 1880, 5-star in **Codechef** with a rating of 2054 (2022)

## INTERNSHIPS

### Malicious Bulletin Board in a Electronic Voting system

Summer 2021

Prof. Lucca Hirschi, Prof. Vincent Laporte—Research Intern

INRIA, Nancy

- Learnt about the various attacks, that can be made by a malicious Bulletin Board in an electronic Voting server(Belenios) from the paper - **Fixing the Achilles Heel of E-Voting: The Bulletin Board**
- Designed the **main logic** for **implementing the attack**(taking the base idea given in B.2 of the paper) by the **malicious Bulletin Board to cheat on the Belenios server**, to favour a chosen candidate
- Coded the main logic of the design as a web server using the **Flask** framework

### AscendPsychology— Software Testing Intern

Winter 2020

- Ran **performance testing** on the company's **Django** based application, with **MySQL** as the database.
- Used the **Locust** Library from python to test the application and the server's endurance under high load conditions
- Simulated Real life conditions** by swarming the server with a **large number of simultaneous requests** making multiple API calls to the system, thus identifying unoptimized API's
- Created a report that was used in identifying a **better allocation of the cloud-based hardware resources**

## KEY PROJECTS

### Notify Me

Autumn 2020

Guide: Prof. Amitabha Sanyal—Course Project

IIT Bombay

- Developing a **Centralized Notification System** for students at IITB for keeping track of all their notifications
- Developing a dashboard website using **Django** Framework with **REST API** backend and **AngularJS** dashboard for professors and TAs to send notifications in groups
- Developing an **Android** application for students to receive notifications by priority and dashboard for professors to create and manage groups by **Flutter** and **Firestore** messaging for notifications

### Practical Optimal Cache replacement policies for Graph Applications

Autumn 2021

Guide: Prof. Biswabandan Panda - Course Project

IIT Bombay

- Modified **Champsim** simulator to compress traces on a per-instruction basis significantly reducing intermediate memory usage increasing the maximum number of instructions from millions to hundreds of billions
- Implemented state-of-the-art **P-OPT** and **T-OPT** cache replacement policies for Graph applications in an Out-of-Order Simulator introducing partial ordering between graph and regular instructions.
- Reduced the LLC miss rate by 20% on various uniform random graphs and Kronecker graphs generated by various graph benchmarks suites.

## Emotify—Emotion Recognition Model

Institute Technical Summer Project

Summer 2020

STAB, IIT Bombay

- Constructed a new **dataset** by using **FER2013** dataset from **Kaggle** and crawled other images from **shutterstock API** using **beautifulsoup** and preprocessed it with **PIL** to match the original FER dataset
- Developed a **model** for **Face Emotion Recognition** using the **Keras** and trained it on the dataset
- Achieved **67%** accuracy, improving upon the existing state-of-the-art model **exNet**
- Built a **Web Application** using the **FLASK** framework as backend for integrating the model

## Secure Chat App

Self Project

Autumn 2020

IIT Bombay

- Created a database encryption key(**dek**) for users which was encrypted by hashing their passwords using **SHA-256** and used it to encrypt all the user's posts using the **AES256** algorithm
- Implemented **ECC** using **tinyec** to generate **public-private key pairs** in a fixed group using the curve **SECP256R1** which was encrypted and stored using dek and AES256
- Created a symmetric key for each chat group by their **public, private key** to encrypt chat data with AES256
- Built a face based login system with **Django** backend using **Face Recognition API** and django function based views

## Sclp: A Language Processor for a Small C-like Language

Guide: Prof. Uday Khedkar - Ongoing Course Project

Spring 2022

IIT Bombay

- Implemented a compiler for MIPS architecture on a reduced version of C language including but not limited to recursion, arrays, pointers, control flows
- Utilized **yacc** and **lex** to handle static scoping, construct Abstract Syntax Tree, Three address codes and register transfer statements

## ANF All-SAT

Guide: Prof. Virendra R. Sule—Course Project

Spring 2021

IIT Bombay

- Developed a tool to perform **ALL-SAT** verification of cryptographic protocols on **SageMath**
- Showed higher level of performance than standard implementations by using **C++ primitives** exposed by SageMath and optimizing functions by **Native Python** methods
- Used SageMath **parallelism** by **Recursive Tree** structure and **Map based implementation** to show higher performance than other implementations

## Exploring Duplications in Natural Regions

Guide: Prof. Ajit Rajwade—Course Project

Spring 2021

IIT Bombay

- Created a large dataset of **synthetic images** by applying **translational and rotational transforms** to snippets from a small set of natural images, which were retouched to create forged images
- Implemented the **Discrete Wavelet Transform(DWT)** and **Kernel Principal Components analysis(KPCA)** based algorithms proposed in the paper - Exploring Duplications in Natural Regions.
- Tested the implemented algorithms on the synthetic images dataset created previously.

## TECHNICAL SKILLS

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<b>Programming</b>	C++, C, Python, Bash, Java, Kotlin, MySQL, Dart
<b>Development</b>	HTML5, CSS, Bootstrap, JavaScript, Django, Flask, AngularJS, Flutter, Firebase
<b>Software</b>	MATLAB/GNU Octave, Git, L <sup>A</sup> T <sub>E</sub> X, Android Studio, Heroku, SageMath
<b>Data Science</b>	OpenCV, TensorFlow, Keras, Matplotlib, Seaborn, Pandas, scikit-learn

## COURSES UNDERTAKEN

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<b>Computer Science</b>	Data Structures and Algorithms, Discrete Structures, Software Systems Lab, Data Analysis and Interpretation, Digital Logic Design, Computer Networks, Design and Analysis of Algorithms, Logic for Computer Science, Computer Programming and Utilization, Advanced Image Processing, Topics in Cryptology, Machine Learning and Artificial Intelligence, Foundations of Intelligent and Learning Agents, Computer Architecture, Operating Systems, Automata Theory**, Advanced Machine Learning**, Advances in Intelligent and Learning Agents**, Database Management**, Implementation of Programming Languages**, Automatic Speech Recognition**, Computer Architecture for Performance and Security**
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<b>Mathematics</b>	Introduction to Probability Theory*, Calculus, Linear Algebra, Numerical Analysis**
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\*\* to be completed by Apr 2022

## EXTRACURRICULARS

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- Successfully completed a year long course under **NSO** in **Classical Music** in the freshman year (2020)
- Successfully completed **Level - 4** in vocals exam conducted by **Annamalai University** (2017)
- Awarded a **tablet** for securing **1st place** in the finals of **PALP's Super Speller** contest (2015)