



Akash Reddy Gillella
Computer Science & Engineering
Indian Institute of Technology Bombay

190050038
B.Tech.
Gender: Male
DOB: 2/23/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	9.73
Intermediate	TSBIE	Sri Chaitanya Narayana Junior College	2019	98.70%
Matriculation	Telangana State Board	Sri Chaitanya Techno School	2017	9.8

Pursuing Minor in **Management** under **SJM - School of Management** (2020 - present)

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 4** in **JEE-Advanced** among **2,45,000** candidates (2019)
- Department Rank 11** in a batch of 145 students of Computer Science and Engineering (2022)
- Awarded **6 AP grades** (Advanced Performer), awarded to **top 1%** among **1100 Students** for outstanding academic performance, in Calculus, Linear Algebra, Quantum Physics and others (2019 - present)
- Bagged **All India Rank 3** in **TS EAMCET** among **1,42,000** candidates (2019)
- Secured **All India Rank 117** among **9,35,000** candidates in **JEE-Mains** (2019)
- Bagged **All India Rank 14** among **1,70,000** candidates in **JEE-Mains-Paper-2** (2019)
- Recipient of **KVPY fellowship** with an **All India Rank 17** (2018-2019)

OLYMPIADS

- Placed in **Top 54** among 42,443 candidates in InCHO and received a **Gold Medal** at the **OCSC-ICO** (2019)
- Placed in **Top 39** among 39,214 candidates in the **Indian National Astronomy Olympiad** (2019)
- Placed in **Top 46** among 45,512 candidates in the **Indian National Physics Olympiad** (2019)
- Placed in **Top 30** among 36,425 candidates in InAO and received a **Gold Medal** at **OCSC-IOAA** (2018)
- Recipient of the **Special Award** for '**Best Solution to a Challenging Data Analysis Question**' at the **OCSC for International Olympiad for Astronomy and Astrophysics** (2018)
- Placed among **Top 36** among 32110 candidates in the InJSO and attended the **OCSC - IJSO** (2017)

INTERNSHIPS & RESEARCH EXPERIENCE

Systems Intern - Software Internship

Mentor: Piyush Bhatore, Systems Engineer

(May - June 2022)

Quadeye Securities

- Implemented **HTTP2 parser** with **CMake build** to decode HTTP2 packets according to RFCs 7540, 7541
- Implemented **HPACK** algorithm of HTTP2 including **Huffman Encoding** and **Dynamic Table Management**

Network Security - Research Project

Guide: Prof. Virendra Singh

(Spring 2022)

RnD Project

- Examined various kinds of cyberattacks such as **DoS, MitM, SSH Bruteforce attacks & ACVs**
- Reviewed literature on **Detection of Access Control Vulnerabilities** in Web Application Components
- Qualitatively compared the architectures of static detection techniques such as **ACMA, CanCheck and MACE**

Quantum Computing - Research Internship

Guide: Prof. Rahul Jain, Center for Quantum Technologies

(Summer 2021)

NUS, Singapore

- Studied concepts of Quantum Information & quantum algorithms like **Simon's, Shor's & Grover's Algorithm**
- Reviewed literature on classical **Tamper Detection, Non-Malleable & Continuous Non-Malleable codes**
- Explored **extension of classical tamper detection to quantum tamper detection** against unitary operators

KEY PROJECTS

Scpl C-like Compiler

Instructor: Uday Khedker

(Spring 2022)

Course Project

- Developed a **compiler** for a subset of C, supporting **functions, scope levels and control sequences**
- Used **Lex** for tokenizing & **Yacc** for parsing to construct **ASTs** and **Three Address Codes**
- Designed **AST and TAC classes** using **Object Oriented Programming** paradigm following class hierarchies

YARA - Restaurant Management App

Instructor: Umesh Bellur

(Spring 2022)

Course Project

- Developed a **RMS** with **ReactJS frontend**, **NodeJS** and **PostgreSQL backend** to manage orders and customers
- Supported **secure login, various user roles** with **cookie-supported access control**, materialized views
- Tested the application with use-cases based functionality testing and **load testing using Apache JMeter**

IPCP Prefetcher for Graph Workloads

Instructor: Prof. Biswa

(Autumn 2021)

Course Project

- Obtained a **4.76% increase in IPC** and over **80% L1D prefetch accuracy** by enhancing the IPCP prefetcher
- Implemented **Thrashing Protection** at L1D, L2C and **Accuracy based Throttling** on GS prefetcher

Feed-Forward Neural Network

Instructor: Prof. Ganesh Ramakrishnan

(Autumn 2021)

Course Project

- Implemented a **Feed Forward Neural Network** testing **96% accurate** with MNIST dataset, using NumPy
- Implemented **FCLayer, ActivationLayer, SoftmaxLayer** with **sigmoid, tanh, relu** activation functions

Bash-like Shell

Instructor: Prof. Mythili Vutukuru

(Autumn 2021)

Course Project

- Built a command line program using **system calls in C** capable of simple linux commands like ls, cat, sleep
- Introduced support for **serial, parallel, background executions** and signal handling of SIGINT

Red Plag

Instructor: Amitabha Sanyal

(Autumn 2020)

Course Project

- Developed a **text-plagiarism detector** with ideas of **Bag of Words** strategy, using RegEx python package
- Provided **customized options** for C++ code and **visualization of results** using Matplotlib in python
- Built a website using **Angular** for frontend and **Django REST-API** for backend requests

OTHER PROJECTS

Enhanced xv6 (Prof. Mythili Vutukuru | Course Project)

(Autumn 2021)

- Extended functionality by having **new system calls** and **variation of fork system call** to better suit use cases
- Implemented **on-demand memory allocation** to ensure physical page allocation is done when needed by OS

Image Texture Synthesis and Transfer (Prof. Ajit Rajwade | Course Project)

(Autumn 2021)

- Implemented MatLab code for **Texture synthesis, Texture transfer** using overlapping patches from an image
- Applied **DP-based Minimum Error Boundary Cut** algorithm for coherency between patches

Network Simulator - C++ (Prof. Vinay J. Riberio | Course Assignment)

(Spring 2021)

- Carried out **network flow simulation** of Hidden Terminal Problem, Three Parallel Flow Problem, Two Serial Flow Problem, which are encountered during CSMA/CA using **ns3 library in C++**

Mastermind Solver (Prof. Ashutosh Gupta | Course Project)

(Spring 2021)

- Implemented a mastermind puzzle solver using **Z3 module in python**
- Further developed the solver to **tolerate an unreliable opponent** and output an optimal solution

Student Course Registration Portal (Prof. Ajit A. Diwan | Course Project)

(Autumn 2020)

- Implemented backend of **Student Course Registration Portal** to register, drop courses, avoid time-slot clashes
- Implemented Student & Course Classes using simple sorted arrays for **optimizing time and memory resources**.

TECHNICAL SKILLS

Languages	C++, Python, Bash, PostgreSQL, Neo4j
Data Science	NumPy, Matplotlib, Pandas
Web Development	HTML, CSS, JavaScript, Angular, Django, ReactJS, Node.JS
Software Tools	Git, L ^A T _E X, Lex, Yacc, Make, cMake, Doxygen, Wireshark, GDB

KEY COURSES UNDERTAKEN

Computer Science	Computer Networks, Operating Systems, Compilers, AI & ML, Foundations of Intelligent & Learning Agents*, Natural Language Processing*, Network Security & Cryptography*
Mathematics	Calculus, Linear Algebra, Numerical Analysis
Others	Game Theory & Economic Analysis*, Economics, Quantum Physics & Applications.

* to be completed by November 2022

EXTRA CURRICULARS

- Secured **3rd place** among 200 Students in **Bazinga Maths** conducted by *MnP Club, IIT Bombay* (2019)
- Participated in the **48-Hours** long **SARCasm** Online Cryptic Hunt organized by *SARC, IIT Bombay* (2019)
- Worked as an **Unacademy Plus Educator**, mentoring over **100** IIT-JEE aspirants (May - July 2020)
- Completed 80 Hours of social service under **National Service Scheme (NSS)** and was awarded **special mention for exemplary volunteering work** under NOCS01 and NOCS02 (2020)
- Attended **Vijyoshi 2018** camp conducted by **IISc Bangalore** in association with **IISER-Bhopal**, keen on motivating students to pursue science and also presenting pilot lectures by leading researchers (2018)
- Hobbies include music, cooking, table tennis, pool, road trips and video games