**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 |

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

## Scholastic Achievements & Olympiads

- 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%** out of **1100 students** *(2019-present)*
- Bagged **All India Rank 3** among **1,42,000** candidates in **TS EAMCET** *(2019)*
- Recipient of **KVPY fellowship** with an **All India Rank 17** *(2018-2019)*
- Received a **Gold Medal** given to **top 54** among 42,443 candidates at OCSC-**ICO** *(2019)*
- Placed in **Top 46** among 45,512 candidates in the **INPO and INAO** *(2019)*
- Received a **Gold Medal** given to **top 30** among 36,425 candidates 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)*

## Internships & Research Experience

**Systems Intern** (*Mentor: Piyush Bhatore |Quadeye Securities)* *(May - June 2022)*
- 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** (*Guide: Prof. Virendra Singh |RnD Project)* *(Spring 2022)*
- 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 Internship** (*Prof. Rahul Jain, CQT |NUS, Singapore)* *(Summer 2021)*
- Studied concepts of Quantum Information & quantum algorithms like **Simon's, Shor's & Grover's Algorithm**
- Reviewed literature on **Tamper Detection codes** and explored extension to **Quantum Tamper Detection**

## Key Projects

**Sclp C-like Compiler** (*Prof. Uday Khedker |Course Project)* *(Spring 2022)*
- Developed a **compiler** for a subset of C, supporting **functions, scope levels and control sequences**
- Designed AST and TAC classes using **OOPs** paradigm and used **Lex** for tokenizing and **Yacc** for parsing

**YARA - Restaurant Management App** (*Prof. Umesh Bellur |Course Project)* *(Spring 2022)*
- 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

**IPCP Prefetcher for Graph Workloads** (*Prof. Biswa |Course Project)* *(Autumn 2021)*
- 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** (*Prof. Ganesh Ramakrishnan |Course Project)* *(Autumn 2021)*
- Implemented a **Feed Forward Neural Network** testing **96% accurate** with MNIST dataset, using NumPy
- Implemented **FCLayer, ActivationLayer, SoftmaxLayer** with **sigmoid, tanh, relu** activation functions

**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

**Bash-like Shell** (*Prof. Mythili Vutukuru |Course Project)* *(Autumn 2021)*
- 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

## 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, LaTeX, Lex, Yacc, Make, cMake, Doxygen, Wireshark, GDB |