Akhil Thirukonda Sivakumar
Indian Institute of Technology Goa

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Education

B.Tech, Computer Science and Engineering, Indian Institute of Technology Goa	CGPA : **8.19/10**	2021 - 2025
Class 12, Telangana State Board, FIITJEE World School Madhapur, Hyderabad	Aggregate : **93.4** %	2020 - 2021
Class 10, Telangana State Board, FIITJEE World School Naryanguda, Hyderabad	CGPA : **10/10**	2018 – 2019

Experience

Research and Development Intern at Siemens EDA, Noida (on-site)
[Under the guidance of Mr.Naveen Khanna, Software Engineering Director, Siemens EDA] (Jan 2025 – July 2025)

- Developed and integrated a **scalable infrastructure** for extensive automated testing and verification of in-house DFT encryption toolkit using **advanced OOPs** in **C++** and **Python** which reduces bug detection time by **70%**
- Worked with the team, analyzed and committed testcases to help debug and update current codebase.
- Collaborated with senior developers to troubleshoot and resolve critical bugs faster than the standard resolution time, contributing to a more stable and reliable product.

Research and Development Intern at Siemens EDA, Noida (on-site)
[Worked with Mr.Anil Kumar, DFT Team lead, Siemens EDA] (May 2024 – July 2024)

- Worked extensively in a **Linux environment** with **AVL Trees** and **advanced OOPS** in **C++** to implement and optimize **two debugging functions** for the company's legacy codebase.

Projects

Weakly Hard Real Time Scheduler (WHaRTS) [Code] [Documentation]
[Under the guidance of Dr. Niraj Kumar, IIT Goa]
Python* | *tkinter* | *system modeling & design

- Developed an interactive application with GUI for simulating task scheduling according to real time algorithms.
- Implemented 4 **multiprocessor algorithms** with a switch for **evenly**, **deeply-red** {m,k} patterns by applying the mathematical models described in this **IEEE research paper**.
- Built from scratch using **custom class and function definitions** to make it **modular and scalable**.

Chat room [Code]
Python* | *SimPy* | *Sockets

- Implemented a **CLI** chat room that can be used to communicate in the same **LAN** as a part of Institute course lab.
- Coded it on a pre-set coding environment using three concepts: **TCP** and **UDP** protocols, and **Python threading**.

Shortest path finder [Code]
C++* | *OOPs* | *Algorithms

- Developed a **CLI application** for determining the shortest path from an adjacency matrix representation of a graph.
- Implemented **two** algorithms in **C++** : **Dijkstra** and **Floyd Warshall** by incorporating **priority queue** data structure and employing **dynamic programming** techniques.
- Designed to display the path itself using **backtracking**, and the corresponding distance.

Custom machine learning layers simulation [Code]
Python* | *Pandas* | *NumPy* | *Google Colab Notebook

- Constructed **six classes** with an **interlinked data highway** to implement necessary layers and loss functions using **Python and Numpy**.
- Trained **Linear regression** and **Softmax classification** models on **large datasets** and achieved **95%** accuracy.
- Monitored loss progression during training and plotted loss curves to visualize model performance over iterations.

Skills

Programming Skills:	C, C++, Python, MIPS Assembly, VHDL, Verilog, Javascript, OOPS, SQL, Testing Automation, Workflow Automation, Scripting, Debugging & Analysis, Architecture Modeling, Application Design
Relevant Coursework:	Data Structures and Algorithms, Algorithm Design, Computer Networks, Probability and Statistics, Discrete Mathematics, Computer Architecture, Machine Learning, Artificial Intelligence, Operating Systems, Compiler Theory, Algebraic Coding Theory and Cryptography, System Design
Software Tools and Frameworks:	Linux, LaTeX, GitHub, MS Office, HTML, CSS, Tkinter, ReactJS, Flask, SimPy, Pandas, NumPy

Positions of Responsibility

Club Head, Cybersecurity club	Took key event-related decisions within the Infosec club.	(Aug 2022 - Aug 2024)
Event Head, Cepheus '23	Led a team of 6 in hosting the inter-college cybersecurity 'Capture The Flag' challenge with over 400 participants. Handled server side application for hosting challenges.	(Feb 2023)

Achievements

- Secured a decent rank in the top 1% in the **JEE Advanced 2021** (2021)