Prakhar Gupta

Indian Institute of Technology, Goa

Fourth Year **Undergraduate**, **Computer Science and Engineering**
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Education

BTech, Computer Science and Engineering, Indian Institute of Technology Goa	CGPA : **7.53/10**	2021 – Present
Class 12, CBSE, St.Xavier's High School, Ailwal	Aggregate: **93.2** %	2019 – 2021
Class 10, ICSE, Jyoti Niketan School, Atlas Tank	Aggregate: **95.4** %	2017 – 2019

Experience

Technology Analyst, ProcDNA (Jan 25 – Present)

- Hands-on experience with **Snowflake**, **Databricks**, Spark, and Data Warehousing solutions.
- Contributed to building and optimizing **ETL** pipelines for efficient data transfer and transformation using Spark and Databricks.
- Supported the integration of cloud platforms **(AWS & Azure)** to improve data storage, scalability, and accessibility for pharmaceutical clients.
- Applied data science techniques to extract actionable data insights and created reports that support key decision-making processes in the pharmaceutical domain.

Underwater Coral Imaging (Jul 24 – Dec 24)

Under Guidance of Dr. Shitala Prasad | IIT Goa| Published in SocPros 2025

- Contributed **2 datasets** for coral species identification to public domain and utilized deep learning models including ResNet-50, GoogleViT, and state of art CocaViT for both **binary and multispecies classification** tasks, training each model to optimize for accuracy and efficiency.
- Binary Classification Performance: Achieved high model accuracy across all architectures, with ResNet-50 reaching **97.53% test accuracy** over 20 epochs. GoogleViT and CocaViT closely followed 96.96% and 97.17% test precision, respectively.
- Multispecies Classification Insights: Achieved robust results with GoogleViT for **32 species classification**, obtaining a **98.36% test accuracy** in 14 epochs. ResNet-50 also performed well with 91.03% test accuracy, while CocaViT maintained 90% test accuracy across species classes.

Projects

Simple Physics Engine [Github] (Mar 24 – Present)

- Designed Physics Engine for point objects, rigid bodies to simulate their interaction in different environments based on principles of classical mechanics.
- Used **C++ with SDL2(Simple DirectMedia Layer)** library based on OpenGL provided efficient low-level way to handle graphics, audio, input and other multimedia functionalities.
- Extended application simulator to **Multi Thread** for efficient handling of user input and Physics using Thread STL, synchronizing between different threads using mutex yielding 30% faster computation time.
- Created key component features like entity, **motion dynamics**, **collision detection and handling**, fixed and variable time stepping, FPS management from ground up.

Attendance System [Github] (Feb 24 – Mar 24)

- Designed biometric authenticated attendance system using Arduino Mega 2560, ensuring no unauthorized attendance marking.
- Saved attendance records on micro SD card using Micro SD TF Card Module, facilitating easy access to historical data and backup.
- Incorporated LCD Display into the circuit simplifying finger registration and logging attendance by providing simple and intuitive user interface
- Used RTC (Real-Time Clock) module to ensure that each attendance entry is accurately timestamped, providing precise tracking of when users check in and out.

WRKFLOW [Github] (May 24 – Jun 24)

- Built Dashboard Web App which is a powerful tool for individuals looking to enhance their productivity by effectively tracking goals and managing tasks. Its **MERN** stack foundation with MVC architecture ensures a reliable, robust and scalable application.
- Integrated Client-Side Rendering **(CSR)** with React for a responsive user interface ensuring initial load times of under 2 seconds.
- Handled Backend by Express.js and **Mongoose**, integrated with MongoDB which supports rapid query execution with average response times for CRUD operations below 50 milliseconds.
- Managed user authentication via username and password credentials, with session management maintained through secure **HTTP cookies**, typically completing within 100 milliseconds.

Skills

Programming Skills:	C, C++, C#, Python, Java, Haskell, JavaScript, TypeScript, Bash, R, Prolog, VHDL, SQL, MIPS Assembly.
Software Skills:	Auto-CAD, Solid works, Unity, LaTex, Git, GitHub, VS, VS Code, Vivado Xilinx, IntelliJ IDEA, Anaconda, Databricks, PowerBI, Excel, Tableau.
Frameworks/Libraries and OS:	Ubuntu, Fedora, Windows, Node, Express, Spring Boot, Bootstrap, React, MongoDB, Mongoose, TensorFlow, Sci-kit-learn, PySpark, SparkSQL, OpenCV, OpenGL, SDL, CUDA C, Posix.
Relevant Coursework	Data Structures and Algorithms, Algorithm Design, Computer Networks, Machine Learning, Artificial Intelligence, Optimization, Computer Architecture, Compiler Design, Unix Tools, Computer Vision, Deep Learning, Time Series Analysis.

Positions of Responsibility

Wing Representative	Hostel Wing Representative in Student Panchayat	(2022 – 2023)
Core-Member	Alpha - Finance Club of IIT Goa	(2023 - 2024)
Event Overseer	Cepheus KBC Event Overseer	(2023 – 2024)

Extracurriculars & Hobbies

- Committed to environmental stewardship, volunteering with Varaha, the Climate Change Society of IIT Goa, to clean various beaches.
- Gaming enthusiast, engaging in fps, strategic, indie and open-world gameplays.
- Competitive table tennis player, participating in tournaments and friendly matches in spare time.
- Dedicated bookworm with a love for literature, exploring diverse genres and authors.