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, supporting both backend data exploration and data mart creation.
- Automated QC processes in **PostgreSQL** by aggregating data from source data lakes and target data marts, validating data integrity through covariance checks.
- Designed interactive dashboards using **Power BI** and **Tableau**, translating complex data into actionable insights for pharmaceutical clients.

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

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.

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

- Designed Physics Engine for point objects, rigid bodies to simulate their interaction in different environments based on principles of classical mechanics managing over 1000+ point objects.
- Modelled on **C++ with SDL 2**(Simple DirectMedia Layer) library based on OpenGL provided efficient low-level way to handle graphics, audio, input and other multimedia functionalities.
- Created key component features like entity,motion dynamics, **collision detection and handling**, fixed and variable time stepping, FPS management from ground up.

Lab Coordinator [Github] (Feb 24 – Mar 24)

- Deployed Lab assessment web application for seamless coordinating between students, TAs and other faculties managing multiple hierarchical user login and respective privileges, tested for more than 50 simultaneous logins.
- Used **SQL** based relation database management system SQLite, an open source which supports ACID (Atomicity, Consistency, Isolation, Durability) transactions providing query execution time of less than 1 millisecond.
- Developed using **NodeJS** and **EJS** for accessing Javascript runtime environment and Javascript template engine respectively.

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	(Mar 23)
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.