

# Prakhar Gupta

Indian Institute of Technology, Goa

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

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## Education

<b>BTech, Computer Science and Engineering</b> , Indian Institute of Technology Goa	CGPA : <b>7.53/10</b>	2021 – Present
<b>Class 12, CBSE</b> , St.Xavier's High School, Ailwal	Aggregate: <b>93.2 %</b>	2019 – 2021
<b>Class 10, ICSE</b> , Jyoti Niketan School, Atlas Tank	Aggregate: <b>95.4 %</b>	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.
- Experienced in data visualization and business intelligence tools such as Power BI, Tableau, and others, with a strong ability to transform complex datasets into interactive and insightful dashboards for data-driven decision-making.

### 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.
- Managed user authentication via username and password credentials, with session management maintained through secure **HTTP cookies**, typically completing within 100 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.
- 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.

### 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.
- Constructed the Backend of **User Management System**, **Viva Scheduling**, Grading Management, Analytics and Reporting for efficient coordination and ensuring seamless experience for both students and examiners.

### Super Unity Mario [Github]

(May 24 – Jun 24)

- Super Unity Mario is a classic platformer game developed in **Unity** inspired from the iconic 1985's Super Mario series, featuring original mechanics focusing initially on the 1st level.
- Introduced unique platforming mechanics, such as advanced player movement with acceleration and deceleration dynamics. Jump mechanics include variable jump heights based on input duration, enhancing player control.
- Implemented with a robust **game manager** system handling various aspects such as player health and lives management, scoring mechanisms of 100 points per coin collected, checkpoint systems at level start, sprite animations and 60 fps deployment.

## Skills

<b>Programming Skills:</b>	C, C++, C#, Python, Java, Haskell, JavaScript, TypeScript, Bash, R, Prolog, VHDL, SQL, MIPS Assembly.
<b>Software Skills:</b>	Auto-CAD, Solid works, Unity, LaTeX, Git, GitHub, VS, VS Code, Vivado Xilinx, IntelliJ IDEA, Anaconda, Databricks, PowerBI, Excel, Tableau.
<b>Frameworks/Libraries and OS:</b>	Ubuntu, Fedora, Windows, Node, Express, Spring Boot, Bootstrap, React, MongoDB, Mongoose, TensorFlow, Sci-kit-learn, PySpark, SparkSQL, OpenCV, OpenGL, SDL, CUDA C, Posix.
<b>Relevant Coursework</b>	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

<b>Wing Representative</b>	Hostel Wing Representative in Student Panchayat	(2022 - 2023)
<b>Core-Member</b>	Alpha - Finance Club of IIT Goa	(Mar 23)
<b>Event Overseer</b>	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.