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

Novel AutoComplete [Github] (May 24 – Jun 24)

- Developed and implemented a **LSTM** neural network architecture that effectively captured long-range dependencies in text, resulting in a 30% improvement in the model's performance compared to recurrent network on complex literary datasets.
- Built on TensorFlow with nominal encoding such as one-hot encoding.
- Implemented **Beam Search** for decoding text sequences. Beam search selects the most likely sequences, which improves the quality and coherence of the generated text.
- Trained on Alice in Wonderland and Frankenstein novels, generating text that reflects the distinctive characteristics of these classic works.

AI Pacman[Github] (Sept 23 – Nov 23)

- Completed 10+ AI algorithms implementation as part of academic lab in python.
- Performed AI searching like **Uninformed** and **Informed search** methods, **CSPs** (constraint satisfaction problems consisting of backtracking search, forward checking as well as constraint propagation).
- Integrated Game Playing technique comprising of **Minimax Search** and their optimisation like **alpha-beta pruning** and evaluation heuristic approximation improving speed by 32% for bigger trees.

OptiML[Github] (Jan 24 – Apr 24)

- Developed a **Deep learning library from scratch** and created a neural network with more than 8 layers on it for Boston Housing dataset.
- Coded fundamental machine learning algorithms and statistical methods, including Linear Regression, Perceptron, and Maximum Likelihood Estimation (MLE), Expectation Maximization (EM), K-Means and Gaussian Mixture Models (GMM).
- Addressed 9+ optimization problems like **Max flow**, **LP** using methods such as Newton's iterative method and Exact line search. Additionally, the project includes modelling and solving optimization problems using **Gurobi** APIs.

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.