Pratyush Biswal

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propixx | Pratyush Biswal

ACADEMIC QUALIFICATIONS

Year	Degree/Certificate	Institute	Performance (CPI/%)
2023 - Present	B.Tech.	Indian Institute of Technology Kanpur	7.0/10.0
2023	CBSE (XII)	Mother's Public School, Bhubaneswar	90%
2021	CBSE (X)	Mother's Public School, Bhubaneswar	96.8%

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 1904** in **Kishore Vaigyanik Protsahan Yojana SA 2021** conducted by **IISc Banglore**.
- Among the **top 301 students** selected from **41,454 candidates** in the **National Standard Examination in Physics (NSEP) 2022**, nationally qualifying for the prestigious **Indian National Physics Olympiad (INPhO) 2023**.
- Awarded **Merit Certificate in Indian Olympiad Qualifier in Mathematics (IOQM)** for outstanding consistent performance in the national-level mathematics olympiad for **two consecutive years (2021–22 and 2022–23)**.

WORK EXPERIENCE

ESG Intelligence & Benchmarking Engine | *AI/ML Intern, CarbonTatvaAI* (*Apr'26–Jul'26*)

Objective	• Develop an ESG platform to benchmark Indian **BRSR disclosures** against sector and custom peer groups.
Approach	• Indexed **5,813 ESG evidence records** and linked **3,864 company-year records** to source documents. • Developed a benchmarking engine computing averages, medians, ranges, KPI coverage and disclosure gaps. • Implemented sector and custom-peer benchmarking with missing-KPI detection and evidence traceability. • Prototyped KPI-to-ESG classification using **Llama 3.1 8B, Unsloth and QLoRA** for disclosure mapping.
Dashboard	• Deployed a GitHub Pages dashboard supporting company/year selection and sector or custom-peer benchmarking. • Visualized KPI coverage, benchmark ranks, disclosure gaps and traceable source-evidence availability.

AIChE Research Trend Analysis | *Research Intern, Prof. Salman Khan, Dept. of Chemical Engineering* (*Jan'26–Ongoing*)
**Received LOR for exceptional performance*

Objective	• Build a research-intelligence platform for thematic, temporal and geographic analysis of AIChE literature.
Approach	• Used Selenium/BeautifulSoup to standardize titles, abstracts, authors and affiliations for **200+ papers**. • Extracted abstract-level keywords using fine-tuned **TinyLlama-1.1B** for downstream thematic analysis. • Compared multiple clustering methods to group keywords and trace shifts across **four research domains**. • Mapped **400+ author locations** across **30+ nations**; compared academia-industry participation by sector.
Development	• Developing a **React frontend** with Node.js/Express REST APIs over a MongoDB-backed database. • Implementing indexed search, multi-field filtering, pagination, accounts, bookmarks and literature collections.

KEY PROJECTS

LabReserve – Laboratory Equipment Reservation Platform | *Self Project* (*Aug'26*)
- Built a **React/Vite client and Node.js/Express REST API** with **MongoDB** for reservation and maintenance workflows.
- Designed **Mongoose schemas and compound indexes**; implemented interval-overlap queries detecting conflicts.
- Implemented **JWT/RBAC with rotating HTTP-only cookies**; integration-tested booking conflicts and approvals.

Spoken Digit Recognition | *EE708 Course Project, IIT Kanpur* (*Mar'26–Apr'26*)
- Built a **PyTorch/torchaudio pipeline** standardizing **37,800 labelled audio recordings** to **16 kHz/1 s** before training.
- Generated log-Mel, delta and delta-delta spectrograms; trained **EfficientNet-B2** to **99.39% mean validation accuracy**.
- Ensembled three fold-specific checkpoints over five temporal shifts for alignment-robust inference on **16,200 test recordings**.

RESEARCH EXPERIENCE

Explanation Faithfulness in Financial ML | *Resarch Project, Prof. Harsh Kasyap, Dept. of CSE, IIT (BHU)* (*Jun'26–Jul'26*)
- Trained **Multinomial Naive Bayes** on **3,453 Financial PhraseBank samples**: **77.0% accuracy/0.695 macro-F1**.
- Implemented a **perturbation-based faithfulness test**, comparing selected-evidence deletion against random-token controls.
- Evidence deletion caused a **0.387 confidence drop** and **47.2% label flips**; random controls yielded 0.069 and 9.6%.

MERT vs CultureMERT for Raga Identification | *Research Project, Madhav Labs, IIT Kanpur* (*May'26–Jun'26*)
- Built a robust recording-wise classification benchmark using **99 recordings, 10 ragas and 5,641 thirty-second segments**.
- Compared frozen **MERT-95M/CultureMERT-95M** representations with pitch-aware CNN-LSTM and Transformer models.
- Best Transformer achieved **43.5% accuracy, 39.3% macro-F1 and 69.8% top-3 accuracy** versus **10% random chance**.

TECHNICAL SKILLS

- **Programming Languages & Libraries:** Python, C, C++, MATLAB, Numpy, Pandas, Matplotlib, SQL, Sklearn
- **Software & Utilities:** ASPEN Plus, AUTOCAD, Git, LaTeX, Colab, Jupyter Notebook, Web Scraping

POSITIONS OF RESPONSIBILITY

Organizer, Hospitality and Transport | **Udghosh'25, IIT Kanpur** (*Jun'25–Oct'25*)
- Led a **100+ member team** to execute hospitality and logistics for **2,000+ participants** across multiple campus venues.
- Managed an **INR 15L+ hospitality budget**, coordinating accommodation across **15+ halls** and vendor transport.
- Implemented tracking and automation for **room allocation, check-ins and transport operations** across **2,000+ guests**.

Secretary | **Raktarpan IIT Kanpur** (*Jun'24–Apr'25*)
- Led **10+ volunteers** across multiple annual campus blood-donation drives, facilitating the collection of **1,000+ units**.
- Managed social media and designed posters, increasing campus awareness and participation among **1,000+ students**.

EXTRA-CURRICULAR ACTIVITIES

- **National Cadet Corps:** Earned **Certificate A**; continued rigorous cadet training with **2 UP Composite Regiment.**