Surabhi Pandey Roll No.:23035010262

B.Sc. Hons. in Data Science and Artificial Intelligence (2023- 2027)
Indian Institute Of Technology, Guwahati

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Sc Hons.	Indian Institute of Technology, Guwahati	7.44 (Current)	2023-Present
Senior Secondary	CBSE Board	89.0%	2021
Secondary	CBSE Board	91.0%	2019

Experience

- **Hybionics Pvt. Ltd.**
  Machine Learning Intern Feb '26 - Present
  – Working on prosthetic sensor signal data (IMU-based time-series) for motion pattern analysis and fall-risk detection.
  – Performing signal preprocessing, windowing, feature extraction, and model experimentation on real-world biomedical datasets.
  – Evaluating model robustness under noisy and patient-specific variations.

- **Research Intern**
  Prof. E.S.N. Raju P. - IIT Guwahati Jan '26 – March '26
  – Worked on explainability of different black-box models trained on different datasets.
  – Models were Classical ML Models and CNNs and tools and methods used were LIME, SHAP, GradCAM and CounterFactuals Explanations.
  – Datasets were Tabular Like and Image like datasets.

- **BioScanAI Pvt. Ltd.**
  Machine Learning Intern Oct '25 – Feb '26
  – Developed and evaluated ML models on retinal imaging datasets for disease classification.
  – Performed data preprocessing, feature engineering, and model validation to improve generalization and robustness.
  – Assisted in experimentation, hyperparameter tuning, and performance benchmarking.

Projects

– **Explainable Deep Learning for Brain Tumor MRI** *2025*
ResNet50 + Grad-CAM + Counterfactual Explanations Grad-CAM Repo | Counterfactual Repo

∗ Trained a ResNet50 CNN model for brain tumor MRI classification using patient-level splits; achieved **94% test accuracy**.
∗ Applied Grad-CAM to visualize discriminative tumor regions and analyze spatial attention consistency.
∗ Generated segmentation-guided counterfactual MRIs and quantified causal dependence using Δ-Drop and Δ-Focus metrics, showing consistent confidence reduction after tumor removal
∗ Achieved 94% overall accuracy (F1: Glioma 0.95, Pituitary 0.98, Meningioma 0.86).

– **OPD Record Management & Disease Prediction System** *2025*
Flask + MySQL + ML GitHub

∗ Built a full-stack healthcare application to manage OPD patient records and predict diseases from symptoms.
∗ Developed ML-based disease classifier and deployed via Flask API with MySQL backend and HTML/CSS frontend.

– **Explainable AI Pipeline** *2026*
LIME, SHAP, IBM AIX360

∗ Applied model-agnostic explanation techniques (LIME, SHAP, AIX360) across multiple datasets to interpret predictions.
∗ Compared local and global feature attribution methods for consistency and stability.

– **Mental Health AI Applications** *2024–2025*
Chatbot + ML Analysis Live Demo

∗ Developed Gemini API-based mental health chatbot with Gradio UI and deployed on HuggingFace.
∗ Implemented crisis keyword detection for emergency resource redirection.

∗ Built ML classifiers on mental health survey data and evaluated using accuracy and F1-score.

– **Time Series Forecasting** *2024*
ARIMA & Prophet

∗ Modeled and forecasted temporal trends using ARIMA and Prophet on real-world datasets.
∗ Evaluated models using cross-validation and residual diagnostics.

Key courses taken

–**Mathematics**: Linear Algebra, Basic Calculus, Optimization, Probability & Statistics
–**Core Courses**: Data Structure and Algorithm, Data Sciences & Data Visualization, Artificial Intelligence, RDBMS, Time Series Analysis

Technical Skills

–**Languages**: Python, R, MySQL, HTML, CSS
–**Libraries/Frameworks**: Scikit-learn, TensorFlow, PyTorch, Pandas, NumPy, Matplotlib, Seaborn, Flask
–**Concepts**: Supervised/Unsupervised Learning, Deep Learning (CNN, RNN, Transformers), Computer-Vision, Segmentation, Time Series Forecasting, Model Evaluation
–**Tools**: Jupyter, Google Colab, GitHub, VS Code

Languages Spoken

–**English**: Fluent
–**Hindi**: Fluent