Surabhi Pandey Roll No.:23035010262

B.Sc. Hons. in Data Science and Artificial Intelligence
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	7.27 (Current)	2023-Present
Senior Secondary	CBSE Board	89.0%	2021
Secondary	CBSE Board	91.0%	2019

Experience

- **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.

- **Hybionics Pvt. Ltd.**
  Machine Learning Intern 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.

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