

## Summary

Computer Science undergraduate specializing in Machine Learning, Deep Learning, and Generative AI. Proven ability to develop AI-driven systems achieving 87% prediction accuracy using Python, TensorFlow, and Transformer models. Experienced in building CNN-powered OCR systems, adaptive learning platforms.

## Projects

### Causal Inference Engine for Market Attribution

- Developed a Causal Inference Engine for market attribution using Propensity Score Matching (PSM) and a T-Learner for Uplift Modeling. The PSM methodology leveraged Nearest Neighbor Matching on biased data to effectively mitigate selection bias and accurately estimate the Average Treatment Effect on the Treated (ATT). The T-Learner was deployed to calculate the Conditional Average Treatment Effect (CATE) and provide actionable, feature-driven intervention decisions based on a predictive uplift threshold.
- Performance Metrics: The PSM Estimated Effect (0.004176) successfully reduced the error by over 50% compared to the Naive Effect (0.001172), closely approximating the True Effect (0.006632) from the randomized A/B data. Final deployment provides decision support for optimal resource allocation using an uplift threshold of  $>0.01$ .

### Customer Churn Prediction Using Random Forest

- This project uses a Random Forest model to predict customer churn. The model is trained on a dataset of customer behavior and demographic features like age and monthly charges. This approach reduces overfitting and improves accuracy. I used hyperparameter tuning to optimize the model's performance. This model performs accuracy of 80.35%.

### Heart Disease Prediction using Logistic Regression

- This project uses a Logistic Regression model to predict heart disease. The model is trained on a dataset containing various features like blood pressure, cholesterol, and BMI. By minimizing errors and assigning weights to each feature, the model determines which factors are most significant.

## Technical Skills

**Generative AI:** LLMs, Fine-tuning, RAG Systems, Prompt Engineering, GPT/BERT Models.

**ML/DL Frameworks:** Scikit-learn.

**Core ML Concepts:** Neural Networks, Backpropagation, Optimization, Evaluation Metrics.

**Data Science:** NumPy, Pandas, Matplotlib, Seaborn, Data Preprocessing, Statistical Analysis.

**ML Deployment:** Flask, Fast API, Docker, REST APIs, Model Serving.

**Programming & Tools:** Python, SQL, Jupiter, Google Collab, Git.

**Databases:** PostgreSQL, Vector Databases.

## Education

**Durgapur Institute of Advanced Technology and Management (DIATM) West Bengal**

**B. Tech: Computer Science & Engineering**

**Expected Graduation:** June 2026 | GPA: 8.2

## Certifications

- Oracle Cloud Infrastructure 2025 Certified Generative AI Professional, Oracle, 2025
- Development of Agent AI for Cybersecurity Internship, IEEE CIS Kolkata, 2024
- Machine Learning using Python, Cadeasy, 2024
- Python for Everybody, Coursera, 2023