Swarnim Tripathi

+91 7607260185 | swarnim.tr@gmail.com | LinkedIn | GitHub | Portfolio
Lucknow, Uttar Pradesh, India

Education

Vellore Institute of Technology — Chennai, India
Bachelor of Technology in Computer Science and Engineering — *July 2024 – May 2028*

Technical Skills

Programming Languages: Python, C++, JavaScript, SQL, Kotlin, Rust, HTML, CSS
Machine Learning and AI: PyTorch, TensorFlow, scikit-learn, Transformers, Fine-tuning, LoRA, Neural Networks, NLP
Frameworks and Libraries: FastAPI, Flask, Django, Pandas, NumPy, Matplotlib, XGBoost
Databases and Storage: PostgreSQL, MongoDB, SQL, NoSQL
DevOps and Cloud: Docker, Docker Compose, Git, Linux, CI/CD, Version Control
Data Science: Feature Engineering, Model Deployment, Data Preprocessing, Statistical Analysis, Reinforcement Learning

Projects

Aura — AI-Powered Diabetes Management | *Python, Flask, Keras, LSTM, PostgreSQL, NLP* | GitHub — 2025

- Engineered a hybrid glucose forecasting system combining a personalized, fine-tuned LSTM model with an event-based adjustment layer, improving prediction accuracy by adapting to individual user data.
- Trained a Deep Q-Network (DQN) agent within a custom physiological simulator to recommend optimal insulin dosing strategies, achieving a 15% improvement in simulated Time-in-Range.
- Developed a sophisticated NLP engine to accurately extract dietary and activity data from unstructured user logs, integrating it into a full-stack Flask and PostgreSQL application with real-time dashboards and automated PDF reporting.

Promptimus - AI Prompt Optimizer | *Python, PyTorch, T5, LoRA, RAG* | GitHub — October 2025

- Architected an AI prompt optimizer by fine-tuning a 220M parameter T5 model with LoRA and a RAG pipeline to automatically rewrite user queries for enhanced LLM performance
- Solved the key challenge of preserving user intent by creating a custom dataset of 200,000 examples and implementing a constrained beam search that used semantic similarity to guide output
- Achieved an average ROUGE-L score of 0.72 against human-written gold standard answers, representing a 28% improvement over the baseline from un-optimized prompts

LearnBuddy - Adaptive Learning Platform | *Python, Flask, PostgreSQL, ML* | GitHub — October 2025

- Architected a hybrid adaptive learning engine combining a Multi-Armed Bandit (MAB) with a heuristic rule system, analyzing the 12 most recent user attempts to personalize content difficulty.
- Implemented the MAB to manage the exploration-exploitation trade-off, automatically advancing difficulty when confidence in the current level exceeded 75%.
- Engineered the heuristic layer for rapid adaptation, triggering difficulty increases after 2 consecutive correct answers (80% success rate) and intervention when success fell below 30%.

Anxiety Level Predictor | *Python, scikit-learn, SGDRegressor, Data Analysis* | GitHub — April 2025

- Processed lifestyle datasets using advanced encoding techniques and trained SGDRegressor model predicting anxiety levels on 1-10 scale
- Implemented robust preprocessing pipeline with missing value imputation achieving competitive MAE through optimization

Certifications

Machine Learning Specialization — June 2025
DeepLearning.AI and Stanford University — *Coursera*

Data Analysis with Python — May 2025
freeCodeCamp — *Online Certificate*