

Swarnendu Biswas

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EDUCATION

Indian Institute of Technology, Kharagpur

2020-2024

B.Tech in Manufacturing Science and Engineering

CGPA: 6.57

Bharatiya Vidya Mandir, Kolkata

2018-2020

CBSE 12th (AISSCE)

Percentage marks: 94

TECHNICAL SKILLS

Languages: Python, C/C++, SQL

Libraries: pandas, NumPy, Matplotlib, TensorFlow, Seaborn

Tools: MS Excel, Power BI, Tableau

EXPERIENCE

Research Intern

December 2022 - March 2023

Under the guidance of Prof A.K. Deb, IIT Kharagpur

- Deployed an inverted pendulum system using OpenAI's gym environment
- Implemented a deep Q-learning algorithm to make sure the pendulum stays balanced after it is disturbed
- Created an animation for the system using Matplotlib showing a cart and pendulum along with plots for different parameters against time

PROJECTS

AI vs Human Text Classifier — ModernBERT + Gradio

Github repo

- Built a text classifier using ModernBERT to distinguish AI-generated and human-written text on a robust dataset, with optimized training to prevent overfitting
- Deployed the model as an interactive Gradio web app, allowing real-time user input and prediction through a clean, accessible UI
- Engineered a complete ML pipeline with GPU acceleration, early stopping, and comprehensive evaluation using classification reports and confusion matrices

Research Agentic System — Tavily + LangGraph

Github repo

- Developed an autonomous multi-agent research system using LangGraph, GROQ, and TAVILY, integrating real-time web search, fact-checking, and automated drafting for high-quality responses.
- Built a modern Streamlit interface with PDF export functionality, featuring a clean UI, clickable citations, and professional formatting for seamless user experience.

Document or PDF abstraction system — MiniLM-L12-v2 + Qdrant-python

Github repo

- Built a semantic search pipeline for PDFs, extracting text with pdfplumber and implementing dynamic semantic chunking using NLP-based sentence similarity and word count constraints.
- Developed a vector search system by generating embeddings with sentence-transformers (MiniLM-L12-v2) and storing them in Qdrant for fast and accurate retrieval.

COVID detection using Neural networks

Github repo

- Developed and implemented Computer Vision to classify chest X-ray images as COVID positive or negative - using publicly available dataset

IMDB Film Reviewers Sentiment Analysis

Github repo

- Implemented sentiment analysis on IMDB dataset consisting of 50,000 movie reviews split equally in positive and negative reviews
- Boosted model performance via vectorization, removing stop words, stemming, lemmatization and n-grams in data cleaning and text pre-processing steps

CERTIFICATIONS

Deep Learning Specialization - Coursera

Course on algorithms, building and training neural network architectures such as CNNs, LSTMs

Power BI for Business Intelligence - Udemy

Course on design and implementation of BI tools, transforming raw data into interactive dashboards