Bodhisattwa Dhara

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EDUCATION

BITS Pilani, Hyderabad Campus

Hyderabad, Telangana

B.E. (Hons.), Mechanical Engineering and Minor in Data Science

2021 - 2025

Work Experience

Undergraduate Research Assistant

August 2023 – Present

BITS Pilani, Hyderabad Campus

Hyderabad, Telangana

- Research Thesis on "Machine Learning enabled Fluidic Droplet Generation" under Dr. Sayan Das (BITS Pilani) & Dr. Jayaprakash K.S. (BITS Pilani) in association with the Student Program for Advancing Research, Knowledge & Entrepreneurship (SPARKLE) Program.
- Automated the designing of Microfluidic Devices for droplet generation by integrating ML Algorithms like KNN and Time Series Analysis.
- Leveraged Support Vector Regression (SVR) & Random Forest Classifier to predict the fluid flow behavior based on input parameters.
- This project aims to advance the capabilities of microfluidic for precise droplet generation using ML models.

Algorithm Analysis intern

May. 2023 – July 2023

Central Electronics Engineering Research Institute (CEERI)

Pilani, Rajasthan

- Real-Time Algorithm Prediction of Low-Powered IOT Devices Research Project under CEERI. [Details bound by contract]
- Worked on developing an algorithm that enables low-power IoT devices of Blood pressure to make accurate predictions in real-time.
- Optimized the memory space of PPG Sensor allowing Enhanced Data Processing and improving overall efficiency and accuracy by 20%.
- Employed Regression models to provide precise and reliable temperature values by interfacing them with different temperature sensors.

TECHNICAL SKILLS

Languages: Python, C/C++, SQL, Java, R

Skills:Data Structures and Algorithms (DSA), Object Oriented Programming Systems (OOPS), Operating Systems (OS), Data Science, Machine Learning, Deep Learning, Cognitive Modelling, Neural Networks, Natural Language Processing, Large Language Models

Developer Tools: Git, Google Cloud Platform, VS Code, Visual Studio, PyCharm, Jupyter Notebook **Libraries**: Pandas, NumPy, Matplotlib, TensorFlow, NLTK, Keras, Seaborn, Sci-kit Learn, SciPy, Opency

PROJECTS

MusePred Chatbot | NLP, Deep Learning and Big Data Analytics

July 2023 – Present

- Chatbot that predicts lyrics and processes the dataset of 12,000+ songs from **Last. FM API** and gives recommendations based on the user's mood using an **IBM tone analyzer**.
- After analyzing the user pattern and taste, this chatbot will recommend similar genres of songs.
- Tech Stack: NLTK, TensorFlow, PyTorch, Fast API integration

7 DOF Motion Manipulators | Machine Learning, Robotics, and Neural Networks Nov 2022 - March 2023

- Developed an advanced robotic system that can perform complex manipulation tasks with enhanced intelligence and adaptability, almost 2 times faster with the help of neural models.
- Used predefined data of other smaller DOF robots to create the correct functioning of the motion manipulator using control algorithms like PID (proportional Integral derivative) and testing it in an artificial environment like Gazebo.
- Tech Stack: RNN, Gaussian Process Regression(GPR), Proportional Integral Derivative (PID), Python

Parachute model optimizer | Fluid Dynamics, Aerodynamics and Machine Learning Nov 2022 – Jan 2023

- evaluated the effectiveness and efficiency of different parachute designs and made decisions on optimal deployment by using experimental data and plotting it and making regression analysis with the ML tool.
- The developed model data was used to predict and calculate the effect of the other parameters on the drag force.
- Tech Stack: Scikit-learn, TensorFlow, Matplotlib, Arduino