Bodhisattwa Dhara

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Education

BITS Pilani, Hyderabad Campus — Hyderabad, Telangana
*Specialisation 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, Opencv

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