

UTPAL RAJ

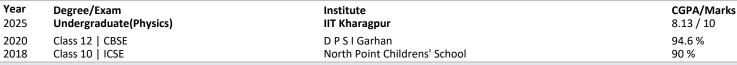
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Skills and Expertise

Skills: Data Science | Data Analysis | Machine Learning | Deep Learning | Natural Language Processing | Generative AI | Data Structure and Algorithms Libraries and frameworks: NumPy | Pandas | Matplotlib | Plotly | Seaborn | LangChain | Flask | FastAPI | Scikit Learn | TensorFlow | Hugging face Tools: Jupyter Notebook | Visual Studio Code | LATEX | Microsoft Office | Tableau | PowerBI

Programming languages: Python | C++ | SQL

INTERNSHIPS

Data Science Intern, Omdena Turkiye

Jun-Aug, 2023

- Worked with an interdisciplinary team to collect, preprocess and develop a machine learning model to predict student success in the Turkish education system to provide data-driven insights for education administrators and policymakers to enhance students' academic achievements
- Worked on Exploratory Data Analysis on a dataset collected through a survey related to courses, professors and effectiveness in a Turkish university
- Used ML models for Clustering and prediction of relevancy of the courses as a part of the evaluation of teaching for professional development

Data Science Intern, Omdena Liberia

July-Oct, 2023

- Worked with a team to develop and deploy a misinformation detection model to safeguard Liberia's democratic integrity during the critical 2023 Senate
 elections, mitigating the risks of misinformation-induced chaos and violence as seen during the 2020 elections while fostering credible decision-making
- Conducted web scraping across diverse Liberian websites and performed extensive data analysis on it. Experimented with models such as BERT and
 XGBoost, ultimately opting for LightGBM to develop a robust fake news detection model for optimal performance resulting in seamless deployment

Machine Learning Intern at Ignitus

Sept-Oct, 2023

 Worked collaboratively to develop the Ignitus LMS (Learning Management System), for remote and asynchronous learning. Performed Classification and Sentiment analysis of Customer reviews based on text review and customer purchase behaviour utilising various models like ROBERTa from Hugging Face

PROJECTS

Medlink | Mercor Startup Gateway Hackathon - https://medlink-2024.vercel.app/

July, 2023

- Participated in a two-day hackathon as a three-man team and created a full-stack healthcare app that centralises patient data, eliminating need of physical Records. Leveraged React.js for frontend, Node.js and MongoDB Atlas for backend, using REST APIs for seamless connection and Cloudinary for file handling
- Integrated an AI disease predictor based on the symptoms and Lifestyle information provided by the user. It is based on a Hugging face LLM model BioBERT
 which is further fine-tuned on the clinical data to output ICD9 codes and the corresponding diagnosis along with it

Modelling of Solitons in phenomena like - Tsunamis, Undular Bore, and Rossby waves Guide: Prof. Vishwanath Shukla, IIT Kharagpur

Jan-May, 2023

- Used Nonlinear Shallow water model for describing Tsunami, Undular Bores and Rossby waves. Used MRLW equations, method of Lines and RungeKutta-4 to discretize the temporal and spatial domain to solve the forced kdv equation, leveraged the Combined Zk-mzk method for deriving Rossby solitons
- Used Python, NumPy, Seaborn, and Matplotlib for modelling and simulating the soliton solutions in the space-time domain for Tsunamis and Rossby Waves

Sentiment Analysis

May 2023

Performed Web Scrapping using BeautifulSoup and Newspaper library on a list of URLs of technology-related articles as provided by the company and
did data cleaning with custom stopwords utilising NLTK library. Performed Extensive data analysis and utilised a list of custom positive and negative
words provided by the company for sentiment analysis based on various parameters to create a final report on the extracted articles

Big Mart Sales Analysis April 2023

Performed **extensive** data analysis on Big Mart 2013 sales dataset for 1600 different products collected over 10 stores in different cities to identify various unique hidden patterns. Performed data cleaning using different methods rigorously and created a **pipeline** for preprocessing the data and predicting the Outlet Sales using Models such as **Decision tree** and **Random Forest** which were fine-tuned to provide the best possible results

Constellation Predictor Aug 2023

- Collected the data through the internet and performed Data Augmentation to create more data to train the computer vision model more efficiently
- Applied CNN-based architecture and transfer learning to create a model for predicting the different types of constellations that are present in our night sky

CERTIFICATIONS

Virtual Internship at Tata: Data Visualization and Analysis using PowerBI: Empowering Business | Data Science Intern at YBI Foundation |
TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning by DeepLearning.AI | Data Analysis: Zero to Pandas by jovian.AI
Natural Language Processing in TensorFlow by DeepLearning.AI | StatPhysicsIndia Conference and Summer School | AI Intern at Cloud Counselling
Machine Learning Specialization by Stanford University and DeepLearning.AI | Supervised Machine Learning: Regression and Classification | Advanced Learning
Algorithms | Unsupervised Learning: Recommenders, Reinforcement Learning

Coursework

Advanced Calculus, Linear Algebra, Numerical Analysis, Statistical Physics, Computational Physics, Programming and Data Structures, Quantum Mechanics, Photonic Quantum Information Technology, Probability and Statistics, Entrepreneurship Essentials, Mathematical Methods, Condensed Matter Physics

Achievements

- Ranked in the top 1% among over one million students in the IIT JEE Mains and Advanced examinations, 2020
- Mentor at Gopali Youth Welfare Society, IIT Kharagpur to provide Career guidance to the Juniors and promote mental well being among them
- Solved 1000+ questions related to **Data Structures and Algorithms, SQL** across various websites like Leetcode, Geek for Geeks, InterviewBit
- Won Silver medal in Bridge games at 2023 General Championship, IIT Kharagpur

