Dr. Swati

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EDUCATION

Ph.D. in Nuclear Physics **July 2013 - October 2019**

Indian Institute of Technology Roorkee

- Thesis Title: "Role of Isospin in Heavy and Neutron-Rich Nuclei"
- With experience in analyzing nuclear structure data and modeling, I have developed strong communication and presentation skills through academic engagements. This has resulted in more than 10 publications in international journals as well as conference proceedings.
- Participated in more than 10 workshops on nuclear physics, nuclear security, and modern theories of nuclear structure to advance my skills and knowledge.

M.Sc.(H.S.) in Physics, 74.15% **July 2010 - June 2012**

Department of Physics, Panjab University, Chandigarh, India

SKILLS

Core Skills – Research, Physics, Mathematics, Report writing, Publications, Exploratory Data Analysis, Data Mining, Web Scraping, Data Quality, Business Intelligence, Feature engineering, Machine learning and Deep learning, Statistical Modeling, Computer Vision, Data Modeling, Model building, Model Deployment

Technical Skills – Python, MySQL, Power BI, MS excel, MS word, MS Power Point, LaTeX, Fortran, Python data analysis and data science libraries (NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, SciPy, Keras, TensorFlow, and OpenCV), Web Development libraries (Flask, Streamlit).

Soft Skills - Critical Thinking, Problem Solving, Project and Time Management, Flexible Approach, Teamwork, Organization and Presentation skills, Multi-tasking.

WORK EXPERIENCE

Data Scientist Intern **June 2023 – January 2024**

360DigiTMG and Innodatatics (Remote)

Acquired valuable data analysis and data science skills through hands-on experience with over 25 use cases and two real-world projects.

- Problem Identification: Demonstrated the ability to understand complex business problems and formulated feasible roadmaps for effective solutions.
- Data Acquisition: Successfully gathered data from primary and secondary sources, maintaining a comprehensive database for analysis.
- Statistical Learning: Applied statistical methods tailored to specific business challenges, ensuring robust analytical approaches.
- Data Movement and Analysis: Executed efficient data extraction and integration into SQL, utilizing advanced queries for thorough analysis.
- Data Preprocessing: Conducted data cleaning and preprocessing steps aligned with business objectives to enhance data quality.
- Feature Engineering: Implemented feature engineering techniques on datasets before input into Machine Learning models, enhancing model performance.
- Data Analysis and Visualization: Identified, analyzed, and interpreted trends and patterns in complex datasets. Utilized various visualization techniques to enhance data understanding.
- Report Making and Presentation: Developed insightful reports using automated Power BI dashboards, presenting actionable business solutions.
- Model Building: Evaluated and tested various Machine Learning algorithms, optimizing hyperparameters to enhance model performance in line with business requirements.
- Model Deployment: Deployed models for different tasks using Flask or Streamlit, ensuring practical implementation and accessibility.

Data Scientist Intern **October 2023 – November 2023**

Oasis infobyte (Remote)

- Contributed to diverse tasks in data analysis and machine learning, showcasing preprocessing, NLP, and predictive modeling knowledge.
- Researched and documented 4 detailed use cases over 1 month, enhancing the team's understanding of user needs and contributing to a 15% improvement in feature implementation efficiency.

Postdoctoral Fellow **December 2019 - November 2022**

School of Physics and Astronomy, Shanghai Jiao Tong University, China

- Spearheaded cross-functional collaboration with international research teams, resulting in the attainment of project objectives; efforts contributed to the successful publication of research findings in esteemed international peer-reviewed journals, amplifying our global recognition and credibility.
- Orchestrated captivating presentations of research findings, distilling complex concept into easily understandable insights; Received commendations for clear communication, fostering deeper understanding and appreciation of the research within the scientific community.

PROJECTS

Optimization of medical inventory **December 2023 –January 2024**

- Conducted thorough testing and evaluation of approximately 10 time series forecasting models for predicting the quantity purchased in a pharmacy using historical sales data analysis. Demonstrated that the PROPHET model outperformed other models, achieving a remarkable 91% accuracy.
- Engineered and advanced Streamlit application to optimize medical inventory management, leading to a minimum 30% reduction in pharmaceutical bounce rate and a revenue increase of at least 20 lakhs INR, enhancing the pharmacy's operational efficiency and profitability.

Integrating Rainfall Time Series and GIS Data for Flood Prediction and Forecasting in Bangladesh. **October 2023 – December 2023**

- Gathered rainfall and GIS data through web scraping techniques
- Pre-processed the data using Python for analysis and Utilized XGBoost regressor for making predictions in the Sylhet region of Bangladesh
- Collaborated with international team members on the project and deployed the application on Streamlit for user interaction

Computer Vision Project - Bird Tracking and their weight detection for Healthcare Management **October 2023 – November 2023**

- Deployed the Yolov8 model for bird tracking, leveraging image processing techniques such as annotations and augmentations; resulted in a 40% increase in tracking accuracy. Utilized OCR techniques to extract weight information from images, enhancing the accuracy and depth of the project.
- Deployed the Flask project, leveraging webcam technology to enable real-time chicken tracking throughout the supply chain; increased operational efficiency by reducing tracking errors by 50% and saving 15+ hours per week.