

Dr. Swati

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PROFILE SUMMARY

Ph.D. in Physics with 3+ years of postdoctoral fellow and 6+ months as a data analyst and scientist experience. Published 15+ papers in the domain of nuclear physics in international journals and conference proceedings. Expert in analytics, problem solving, and machine learning/deep learning frameworks. Successfully deployed end-to-end ML solutions for 5 real-time projects, collaborating in a diverse team of 50+ international members.

EDUCATION

Ph.D. Nuclear Physics | Thesis Title: "Role of Isospin in Heavy and Neutron-Rich Nuclei"

July 2013 - October 2019

Indian Institute of Technology Roorkee, India

- Engaged in more than 10 specialized workshops, conducting comprehensive analyses of nuclear structure data and honing expertise in modeling techniques, thereby cultivating advanced research acumen within the realm of nuclear physics.
- Demonstrated exceptional problem-solving skills by tackling intricate challenges and delivering innovative solutions, resulting in a prolific scholarly output that includes the publication of over 10 research papers in esteemed international journals and conference proceedings.

M.Sc. (H.S.) in Physics

July 2010 - June 2012

Department of Physics, Panjab University, Chandigarh, India | 74.15%

SKILLS

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

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, Yolo, paddleOCR, OpenCV and NLTK), Web Development libraries (Flask, Streamlit)

Business Skills – Project Management, Teamwork, Report writing, Organization skills, storytelling, Multi-tasking.

Language – English, Hindi, Punjabi

WORK EXPERIENCE

Junior ML Engineer | Omdena | Freelance | Remote

October 2023 – March 2024

- Spearheaded two groundbreaking projects, actively driving impactful outcomes in real-world applications.
- Led a collaborative effort with a diverse international team of over 100 members to deliver comprehensive end-to-end ML solutions. This involved conducting in-depth research, sophisticated analysis, precise model building, and successful deployment.

Market Research Externship | Paragon One | National Research Group | Remote

February 2024 – March 2024

- Conducted comprehensive research on the policy influence landscape regarding The Environment within North America region, uncovering critical insights to inform strategic decision-making. Strategically identified and shortlisted top 8 policy influencers based on their contributions and influence.
- Executed in-depth secondary research to compile essential data on the identified policy influencers and their overall impact on The Environment.

Data Scientist Intern | INNODATATICS * Innovation | 360DigitMg | Remote

October 2023 – January 2024

- Engaged in and significantly contributed to two high-impact real-world projects. Transformed raw data into actionable insights by analyzing data using SQL and creating dynamic reports through Power BI dashboards to present innovative business solutions. Implemented advanced data cleaning techniques and conducted feature engineering, resulting in a remarkable 40% reduction in data processing time while enhancing accuracy.
- Developed and deployed ML algorithms, optimizing hyperparameters to meet specific business needs and ensuring seamless implementation.

Postdoctoral Fellow | School of Physics and Astronomy, Shanghai Jiao Tong University, China

December 2019 - November 2022

- Pioneered a collaborative initiative with global researchers to curate a comprehensive Nuclear Isomer Database from over 10,000 research articles. This database comprises 2,750 unique isomer entries with essential features, serving as a pivotal asset within the nuclear community.
- Enhanced the comprehension of nuclear isomers by identifying intricate patterns within the dataset, leading to the publication of a research article. ([link](#))
- Provided theoretical insights into the fission process and fission fragment distributions, employing the concept of isospin conservation. ([link](#))

PROJECTS

Leveraging LLMs to Understand Global Mental Health Well-being & Fomo

February 2024 - March 2024

- Pioneered AI ethics-compliant data collection from Twitter and Facebook, ensuring privacy and integrity. Implemented state-of-the-art NLP techniques for data preprocessing, ensuring robust analysis.
- Conducted sentiment analysis utilizing XGBoost and BERT models for comprehensive emotional insight.
- Innovatively utilized RAG technique with Mistral-7b LLM for enhanced data interpretation.
- Developed and deployed a user-friendly application on Hugging Face server, revolutionizing mental health assessment. ([link](#))

Analyzing Brain Scan Images for the Early Detection and Diagnosis of Alzheimer's Disease

December 2023 - February 2024

- Gathered MRI brain scans from Kaggle and the ADNI database. Established a custom Convolutional Neural Network (CNN) architecture, employing KerasTuner for hyperparameter tuning. Achieved an impressive model accuracy of 99.22%. ([link](#))

Optimization of medical inventory

December 2023 - January 2024

- Conducted thorough testing and evaluation of 10 time series forecasting models for predicting the drug quantity purchased.
- PROPHET model outperformed others, achieving a remarkable 91% accuracy. Engineered Streamlit application, leading to a minimum 30% reduction in pharmaceutical bounce rate and a revenue increase of at least 20 lacs 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 10 years of rainfall and GIS data through web scraping techniques. Pre-processed the data using Python and Utilized XGBoost regressor for making predictions, achieving 80% accuracy and developed a user-friendly application on Streamlit. ([link](#))

Computer Vision Project - Bird Tracking and their weight detection for Healthcare Management

October 2023 - November 2023

- Manually annotated 300 images using Roboflow. Built a YOLOv8 model for bird tracking, realizing a 30% improvement in accuracy.
- Applied OCR techniques to extract weight information from images, enhancing the depth of analysis and contributing to more impactful outcomes.
- Deployed Flask project, leveraging webcam technology for real-time chicken tracking, reducing errors by 50% and saving 15+ hours per week.

CERTIFICATIONS

- Introduction to Python
- Basic course on SQL
- Data Visualization using Power BI
- Data Science using Python Programming