Debisree Ray, Ph.D. Data Scientist | Computational Physicist

NYC / Memphis (willing to relocate) (662) 694-1319 debisreer@gmail.com/ debisreeray@gmail.com
linkedin.com/in/debisree-ray-ph-d-82241355

github.com/debisree
kaggle.com/debisree
medium.com/@debisreer
Google Scholar

SUMMARY

Ph.D. Data Scientist and Computational Physicist experienced in building scalable, AI/ML-driven solutions. Proficient in developing and deploying machine learning models, statistical data analysis, and LLM-powered applications. Aims to leverage data insights for strategic decision-making and business improvements.

TECHNICAL SKILLS

Languages & Tools: Python, SQL, HTML, Fortran, MATLAB, Git, VS Code, Jupyter/Anaconda, L ATEX
ML / DL: Regression, Classification, Random Forest, XGBoost, sklearn, TensorFlow, Keras, feature engineering, model interpretability, LLMs (RAG), algorithm development
Analytics: Data cleaning, data pre-processing, data storytelling, data visualization, EDA, statistical hypothesis testing, A/B testing, statistical analysis
Apps & Viz: Azure App Service, Databricks App, Pandas, NumPy, Plotly, Matplotlib, Seaborn, Dash, Gradio, Flask, Power BI
Cloud & MLOps: Azure ML, Databricks, MLflow, CI/CD (Azure DevOps)
Scientific Computing: HPC, numerical methods, parallel jobs on high-performance clusters

CERTIFICATIONS SIX SIGMA YELLOW BELT; DATA SCIENCE DOJO; SPRINGBOARD DS CAREER TRACK; GENAI CAPSTONE (GOOGLE/KAGGLE)

Specific AI/ML Experience: basic proficiency
Industry Experience: moderate proficiency

EXPERIENCE

Data Scientist — Big River Steel / U.S. Steel (acquired by Nippon Steel); 2021–Present

- • Led the design and deployment of an SPC analytics dashboard (Python/Flask) with CI/CD on Azure App Service, resulting in its adoption for daily operations and audits.
- • Developed and productionized XGBoost regression models for predicting magnetic properties (R2= 0.92–0.96) across multiple product types, demonstrably reducing rework/scrap and tracked model performance using MLflow.
- • Conducted root cause analysis (RCA), statistical analysis, and data visualization to identify opportunities for yield improvement and enhanced product understanding.
- • Engineered an LLM-backed customer feedback dashboard for the Sales team, enabling efficient summarization and sentiment analysis of customer documents.
- • Delivered executive-level data narratives and visualizations to guide strategic decisions in operations, quality control, and maintenance.

Data Analyst Intern — PreScouter; 2019–2020

- • Produced analytic reports from global livestock shipping data, enabling data-driven insights for cross-functional stakeholders.
- • Performed data wrangling, exploratory data analysis (EDA), and created compelling data visualizations using Python (Pandas, Plotly).
- • Delivered a final Jupyter notebook and presentation that received positive feedback from the client.

Postdoctoral Associate — Institute for Systems Engineering Research (ISER) / Mississippi State University; 2017–2019

Immersive Virtual Training Environment for Teaching Single- and Multi-Queuing Theory

- Contributed to the programming of the Unity 3D simulation environment.
- Co-led pilot data collection efforts and performed statistical analysis and visualization of the collected data.
- Contributed to the writing and preparation of research manuscripts.

Graduate Research & Teaching Assistant — Dept. of Physics & Astronomy, Mississippi State University; 2011–2017

- Studied nuclear structure using Covariant Density Functional Theory (CDFT) and high-performance computing (HPC).
- Developed Fortran utilities for automated post-processing of research outputs, streamlining data analysis workflows.
- Visualized data using MATLAB, XMGrace, and GNUplot; prepared manuscripts and dissertation in L ATEX.
- Led and assisted in laboratory sessions, providing mentorship, grading assignments, and delivering conference presentations.

Part-Time & Guest College Lecturer / Instructor — Undergraduate Colleges, University of Calcutta; 2010–2011

- Taught physics courses (all levels), created assignments and exams, graded student work, and mentored students.
- Conducted lab courses and provided support for departmental services (e.g., proctoring, grading).

Visiting Students' Research Program — Harish-Chandra Research Institute (HRI), India; 2011

- Curated a dataset of millisecond pulsars (Linux/Ubuntu) and created GNUplot visualizations to explore the data.

EDUCATION

Springboard — Mar 2019–Nov 2019
–Bootcamp Certification: Data Science Career Track
–Capstone Project I: "Predicting Cab Booking Cancellation"
–Capstone Project II: "Building a Book Recommendation Engine with Simple and Collaborative Filtering"
Mississippi State University , Dept. of Physics & Astronomy — Fall 2011–Spring 2017
–Ph.D. in Engineering (Computational Nuclear Structure Physics)
–Dissertation: "Covariant Density Functional Theory: Global Performance and Rotating Nuclei"
University of Calcutta , Dept. of Physics (Rajabazar Science College) — 2008–2010
–M.Sc. in Physics
University of Calcutta — 2004–2008
–B.Sc. in Physics (Major)
–Minors: Mathematics & Electronics
Professional membership, Leadership & Service / Volunteering
Editor, Real World Data Science (a collaborative initiative by the Royal Statistical Society (RSS) in partnership with the American Statistical Association (ASA)). (2025 -)
American Statistical Association (ASA) — Member, 2023–Present
Events Manager, WiMLDS (Women in ML and Data Science) NYC (2025–)
Peer Reviewer: ACM Computing Surveys, APS (American Physical Society), MDPI Journals (2019–)
Co-chair, NextGen Steel, Employee Resource Group, U.S. Steel (2022–2024)
Volunteer: Statistics Without Borders — Data Science consultant, New Client Acquisition (2022–2024)
VP, Treasurer, Journal Club Coordinator: Physics GSA, Mississippi State University (2013–2016)
VP: Indian Student Association, Mississippi State University (2013–2014)

AWARDS

Scholarship from Linux Foundation to attend JupyterCon (2025)
ASEE Annual Conference & Exposition — Industrial Engineering Division Best Paper Award (2018)
Best Talk, Physics GSA, MSU (2015)
APS Travel Award (2014); Bagley College of Engineering Travel Award (2015)