Rushabh Gala

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EXPERIENCE

Data Scientist Assistant North Carolina State University, Raleigh, NC 2021 - Present

- Developed a data cleaning and reduction pipeline that compressed simulated data by 66%, significantly improving analysis turnaround times, allowing for faster decision-making and insights.
- IApplied Bayesian statistics to perform simulations and analyzed large datasets, achieving an uncertainty below 10%, enabling more accurate predictive modeling for research outcomes.
- Led a cross-functional team to model background radiation for the LEGEND-1000 experiment, resulting in a 100x noise reduction, improving the precision of experimental data.
- Delivered statistical analyses, including regression and non-linear fitting, which reduced errors in predicting decay rates to 0.1%, supporting more reliable data interpretation.
- Enhanced team efficiency by automating data pipelines, reducing manual intervention, and ensuring timely delivery of results.

Software Research Assistant North Carolina State University, Raleigh, NC 2019 - 2021

- Spearheaded the design and development of a Monte Carlo simulation framework, achieving a noise reduction target of < 1 count over 10 years, critical for high-precision measurements.
- Collaborated with engineers to improve photon detection sensitivity by 2x, providing consulting expertise that optimized hardware performance.
- Automated optical map production processes, reducing computation time from weeks to one day, improving team productivity and client satisfaction.

Research Assistant North Carolina State University, Raleigh, NC 2018 - 2021

- Improved simulation efficiency and accuracy by 33% through expert guidance on data analysis, enhancing the team's ability to meet project deadlines and research goals.
- Mentored students in optimizing simulation geometries, improving team collaboration and developing a foundation for future experimental methodologies.

SKILLS

Programming Skills	Python, C++, Bash, Julia, Mathematica
Data Analysis & Visualization	Tableau, Power BI, ROOT, Excel, Statistical Modeling, Predictive Analysis
Software and Tools	Docker, Git, Linux, Snakemake, GEANT4, Monte Carlo Simulations
Soft Skills	Team Leadership, Cross-functional Collaboration, Project Management, Problem-Solving, Communication

EDUCATION

PhD in Nuclear Physics	NC State University	Aug 2018 - Dec 2024
Master's in Physics	University of Mumbai	Aug 2015 - May 2017
Bachelor's in Physics	Ramnarain Ruia College	Aug 2012 - May 2015

SELECTED PUBLICATIONS

Abgrall, N. et al. (2021). "LEGEND-1000 Preconceptual Design Report". In: arXiv: 2107.11462.

Dey, P. et al. (2022). "Experimental investigation of high-spin states in ^{90}Zr". In: *Phys. Rev. C* 105 (4), p. 044307. DOI: 10.1103/PhysRevC.105.044307.

Gala, R. (2023). "Background Modeling for LEGEND-200". In: *Proceedings of Scinece (accepted)*.