NIKHIL P. S. BISHT

nikhilbisht65@gmail.com linkedin.com/in/nikhilpsbisht +1 (850) 966 3972
astrodnerd.github.io github.com/AstroDnerd

Professional Summary

PhD Candidate with strong training in applied data science, statistical inference, and machine learning. Experienced in building and evaluating predictive and probabilistic models, designing experiments, and analyzing large-scale datasets to support data-driven decision making. Proficient in Python, SQL, and modern ML frameworks.

Education

Florida State University (FSU), Tallahassee, FL 2022–Present
PhD Physics, Doctoral Candidate; Thesis: Forecasting Molecular Cloud Collapse with ENZO using Deep Learning

Birla Institute of Technology and Science (BITS), Pilani,India 2017–2022
MSc. (Hons.) Physics + B.E. (Hons.) Computer Science

Professional Experience

Data Scientist (Graduate Research Fellow), *Florida State University, FL* Nov'22 - Present

- **Designed and evaluated** predictive models on multi-terabyte dynamical simulation data using Python and PyTorch, analyzing tradeoffs using statistical tests and sensitivity analysis.
- Built **reproducible ETL and analysis pipelines** (HDF5/Parquet, SQL) to support rigorous experimentation, optimizing I/O throughput by **67%** via **Multi-GPU distributed training** and enabling repeatable validation of modeling choices.
- **Partnered with researchers** and engineers to define modeling goals, iterate on assumptions, and communicate results through presentations and written summaries.
- *Selected Presentations:* 3-Minute Thesis (First Place); Graduate University Symposium, FSU

Undergraduate Applied Physics & Machine Learning Engineer, *BITS Goa* Jul'20 - Aug'22

- Designed **Bayesian Neural Networks (BNN)** for multi-target probabilistic regression, successfully modeling high-dimensional non-linear relationships with quantified uncertainty intervals in **noisy environments with unstructured datasets**.
- **Quantified model performance and uncertainty** through cross-validation and error analysis, informing tradeoffs between model complexity, interpretability, and predictive accuracy.
- *Selected Presentations:* Undergraduate University Colloqium, BITS

Skills and Expertise

Languages: Python, R, SQL, C/C++, Shell Scripting.
ML Frameworks: PyTorch, Scikit-learn, TensorFlow, Keras, XGBoost.
Data Visualization: Tableau, Matplotlib, Seaborn, Plotly, ggplot, Advanced Excel.
Data Engineering: ETL Pipelines, SQLite, HDF5, Parquet, Distributed Computing.

Projects

Healthcare Appointment Risk Modeling (PHN), *XGBoost, Feature Engineering, SHAP, Streamlit* May'25 - Aug'25

- **Built and deployed** an XGBoost model on >100k appointments to predict no-shows (ROC-AUC 0.735), on temporal, behavioral, and access features; optimizing decision thresholds using intervention cost & lost-revenue tradeoffs to project ∼$193K in net savings.
- **Operationalized predictions via an interactive dashboard** (daily risk monitor, threshold tuning, prioritized patient list) and conducted **SHAP-based interpretability** and payer-level fairness checks to support responsible deployment.

Non-Linear Regression & Inference Modeling, *Python, Scipy, Statistical Analysis* Jun'18 - Dec'18

- **Modeled** the rotational velocities of galaxies to infer the distribution of mass by processing noisy spectroscopic data.
- Applied **Non-Linear Least Squares regression** to fit multi-component mass models to the observed data to minimize χ^2 **error**, statistically confirming the necessity of Dark Matter halos to explain velocity dispersions in local cluster galaxies.

Lead Engineer (Computer Science Vertical), Project Radio Telescope, *BITS Goa* Mar'18 - Jul'22

- **Founded and led** a cross-functional team of 10+ engineers to design and deploy a full-stack data acquisition and signal processing system for radio astronomy instrumentation.
- **Built automated pipelines** for real-time spectral data ingestion, cleaning, feature extraction, noise reduction, and **designed metrics** to validate signal quality and system performance, guiding improvements to hardware and software components.
- *Selected Presentations:* Vigyaan Samajam, Mumbai (India's largest science exhibition); Best Department Project, BITS Goa

Awards

First Place, 3 Minute Thesis Competition (3MT), Florida State University Mar'25
State Topper (Goa), National Graduate Physics Examination (NGPE) Jan'19
Silver Medal, University Physics Competition (UPC) Nov'18