Shaan Patel

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Education

University of Texas at Arlington
*Doctoral Candidate in **Physics and Applied Physics***   2025
- Published 7 publications and delivered research presentations at 3 physics conferences

*M.S. in **Physics**, GPA: 4.00*   2025

Georgia Institute of Technology
*B.S. in **Physics**, Highest Honor*   2019

Experience

Researcher, **Exoplanets/Exomoons and Habitability at UTA**   2021 – 2025
- Conducted 50,000+ numerical simulations in Python to investigate orbital dynamics, improving runtime efficiency by 80%
- Encoded mathematical formulations into executable code, enabling efficient large-scale numerical analysis and reducing computation time by 90%
- Analyzed and visualized large-scale datasets comprising millions of data points, identifying key dynamical patterns

Intern, **SuperCDMS Group at SLAC National Accelerator Lab**   2019
- Collaborated with the Cryogenic Dark Matter Search (CDMS) team to test wiring and readout electronics for the He-3/He-4 dilution refrigerator

Member, **Numerical Relativity Research Group at Georgia Tech**   2018 – 2019
- Simulated binary black hole systems on HPC clusters to support LIGO research and visualized resulting gravitational wave data

Group Leader, **Gravitational Waves Astrophysics Project**   2017 – 2018
- Led undergraduate research team in simulation and visualization of binary black hole systems
- Used VisIt to visualize black hole apparent horizons and create animations of their spiral and merger from simulation data

Projects

DefCoordML: NFL Play Prediction
- Developed ML models to predict NFL offensive plays (pass vs. rush) using historical game data
- Achieved 75% accuracy and 0.82 ROC AUC through feature engineering and model tuning

Skills

Languages
Python, SQL, Excel, HTML/CSS
Frameworks/Tools
PyTorch, Scikit-learn, NumPy, pandas, SciPy, matplotlib, seaborn, Linux Command Line, Git/Github, Jupyter, LaTeX
Machine Learning Skills
Data Preprocessing, Feature Engineering, Hyperparameter Tuning, Model Training
Communication
Presentations, Leading Research Projects, Technical Writing