# Shaan Patel

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## Education

**University of Texas at Arlington**
*Doctoral Candidate in **Physics and Applied Physics***     2025
- Published 6 peer-reviewed publications and delivered 3 research presentations at 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

**Programming Languages**
Python, SQL, LaTeX
**Frameworks**
PyTorch, Scikit-learn, NumPy, pandas, matplotlib, seaborn, Linux Command Line
**Communication**
Presentations, Leading Research Projects, Technical Writing