

Brandon Stevenson

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Quantitatively trained physicist pursuing a Ph.D. in Physics (expected 2026) with a strong foundation in advanced statistical methods, machine learning, and high-fidelity simulations. Holds a B.S. in Physics from the University of Texas at Dallas and has completed rigorous graduate-level coursework in high-energy physics. Experienced in applying computational and data-driven techniques to complex, large-scale problems, with strong programming and analytical skills suited for data science, AI, and quantitative research roles.

EDUCATION

Southern Methodist University | *Ph.D. in Physics* 2019 - 2026

University of Texas: Dallas | *B.S. in Physics* 2012 - 2016

SELECTED RESEARCH EXPERIENCE

Applied Machine Learning Research | *Ph.D. Research at SMU* 2019 - Present

Designing and training deep learning models (CNNs, Transformers, VAEs) on high-dimensional physics data including cosmic microwave background and particle collision simulations, advancing both fundamental physics understanding and ML methodology.

Tech: Python, PyTorch, TensorFlow/Keras, scikit-learn, optuna, NumPy/SciPy, CAMB, Pixell, Cython, Fortran

Published peer-reviewed research applying statistical methods to cosmology data

Primordial Non-Gaussianity in the CMB | *Prof. Joel Meyers* 2023 - 2026

Investigating the presence of primordial non-Gaussianity in the cosmic microwave background using advanced statistical techniques and machine learning models to extract subtle signals from high-dimensional data.

Tech: Python, TensorFlow/Keras, Cython, CAMB, Pixell, LensPyx, HealPy, NumPy/SciPy, Matplotlib

Gluon Saturation | *Prof. Fred Olness* 2024 - 2026

Analyzing deep inelastic scattering data to study gluon saturation effects at small Bjorken-x using machine learning techniques to improve parton distribution function extractions.

Tech: Python, xFitter, TensorFlow/Keras, NumPy/SciPy, Matplotlib

PROFESSIONAL EXPERIENCE

L3 Technologies: Comcept | *TS/SCI* | *Big Data Engineer II* 2017 - 2019

Designed and deployed machine learning algorithms for large-scale data systems processing high-throughput streaming data, optimizing model inference for production environments.

Developed analytic solutions for mission-critical problems including the classification problem.

Built and maintained distributed microservices architecture using Scala and Java across containerized infrastructure.

Collaborated with cross-functional teams to translate research into production-grade systems.

SKILLS

Production ML PyTorch, TensorFlow/Keras, scikit-learn, XGBoost, LightGBM, optuna, model deployment, inference optimization

Programming Languages Python (expert), Scala, Java, C/C++, JavaScript, R, MATLAB, Mathematica, Fortran

Data Science / ML Methods Deep learning (CNNs, Transformers, VAEs), statistical inference, Monte Carlo methods, distributed computing, Bayesian analysis

Scientific Computing NumPy/SciPy, Cython, CAMB, pixell, healpix, Cobaya, CLASS, HealPy

Physics Tools xFitter, ROOT, MadGraph, Pythia, Geant4

Soft Skills Technical leadership, cross-functional collaboration, mentoring, scientific writing, rapid prototyping

SELECTED PAPERS

Beyond Fisher forecasting for cosmology | *Phys. Rev. D* 107, 103506 2023

Conducted an analysis of Big Bang Nucleosynthesis simulations by employing advanced statistical methods to identify deviations from Gaussian priors.

Employed the DALI method for quantifying the breakdown of these priors and systematically assessed instances where this approach outperforms, and under performs, conventional Fisher methods.

SELECTED AWARDS

Rising Star Award | \$10,000 | L3 Technologies 2018