

Aditya Gadam

(669) 204 9972 | Santa Cruz, CA | sgadam@ucsc.edu | [LinkedIn](#) | [GitHub](#) | [Publications](#)

SKILLS & CERTIFICATIONS

- Languages & Platforms: Python, R, Mathematica, SQL, MatLab, GitHub, Excel, Word, Powerpoint, Jupyter
- Python Libraries: SciPy, Pytorch, Statsmodels, Matplotlib, Seaborn, Scikit-Learn/Optimize, Pandas, Tensorflow, PyWavelets
- Machine Learning: Reinforcement Learning, MCMC, n-dimensional MLE optimization, Classification & Regression Techniques
- Quantitative: Predictive Numerical Modeling, Stochastic Differential Equations, Bayesian Inference, Dynamical Systems, A/B
- Soft Skills: Strong Communication Skills, Excellent Cross-functional Collaborator, Proactive Independent Project Initiator
- Select Certifications: [Erdos Institute Data Science Bootcamp](#), [Python: Data Science](#), [Bayesian Statistics](#), [Portfolio Optimization](#)

EDUCATION

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|--|-----------------|-------------|
| Ph.D. Theoretical Particle Physics (GPA: 4.00, <i>Chancellor's Dissertation Award, Leadership Award</i>) | (UC Santa Cruz) | 2025 |
| M.Sc. Theoretical Physics (GPA: N/A) | (UC Santa Cruz) | 2021 |
| B.Sc. Honors Physics & Joint Mathematics-Economics cum laude (GPA: 4.00/3.84, <i>Dean's Award</i>) | (UC San Diego) | 2018 |

PROJECTS

Predictions of Rare Quantum Decays [\[LINK\]](#), [\[SLIDES\]](#) **2024**

- Built high-precision computational *python* framework, doubling accuracy limits for particle decays via innovative feature modeling
- Engineered custom PDE solver & JAGS Monte Carlo generator, enabling first-time signal extraction at high precision (90%)
- Demonstrated impact: Several research teams immediately integrated feature into their optimization workflows, pre-publications

Particle Collision Simulation and Data Analysis [\[LINK\]](#), [\[SLIDES\]](#) **2023**

- Identified hidden patterns in experimental data anomalies using statistical modeling to test unvalidated theoretical models
- Built simulation framework processing millions of datapoints to achieve 95% confidence in signal detection with *scikit-optimize*
- Generated *Seaborn* visualized and quantitative forecasts of system behaviors, demonstrating clear value for future experiments
- Developed *Mathematica* analysis adopted by 30+ research teams, providing pre-optimized computations via parameter tuning

WORK EXPERIENCE

University of California, Santa Cruz, U.S.A **2019 - 2025**

Graduate Student Researcher

Led research advancing precision quantum process predictions through novel analytic and computational frameworks coupled with optimization techniques. Several publications appear in the Physical Review; sponsored to present at major international conferences. Initiated independent research collaborations, teaching and mentoring graduate students in the execution of these projects. Select projects include -

- **(Project)** Predicting Faculty Hiring Trends for Applicants: Performed mixed time series forecasting through *statsmodels* and PCA based polynomial regression (*fredapi*, *sklearn*) on a dataset of faculty hires against economic factors, performing 8% better than the baseline. Compared various filters and regression algorithms; decomposed residuals to analyze cyclicity. [\[GitHub\]](#)
- **(Project)** Stable Quantum Trajectories: Solving mixed type PDEs on an alternate measure space and explored eigen-stability, employing *scipy*, *numpy* and *matplotlib* animations to demonstrate the state space evolutions of various distributions. [\[GitHub\]](#)
- **(Project)** Global Hyperparameter Fits: Condensing experimental datasets, using *Flavio* to create the first large scale global Bayesian likelihood, minimizing on a supercomputing cluster via *tensorflow* & *scipy*, identifying highly correlated factors. [\[GitHub\]](#)

Siemens Digital Industry Software: Leuven, Belgium **2019 - 2019**

Junior Research Engineer

Performed venture research into machine learning for control systems and optimized reinforcement learning implementations.

- Implemented Neural Network based control of a fundamental simulated component, performing at 89% efficiency
- Successfully trained RL based decision agents in variable environments to 86% precision to solve lack of dynamic control
- Built dynamic plotting routines to demonstrate the comparative learning of various algorithms for visualizations and tutorials

LEADERSHIP EXPERIENCE

Graduate Student Association of UC Santa Cruz **2023 - 2025**

Chair of Council

Oversaw council governance, led collaborative graduate meetings as the primary liaison between the student body and university administration.

- Optimized (saving \$1000) and assigned funding allocations over \$20,000 for student initiatives, compliant with internal policy
- Led state-level advocacy appealing to the CA government to address a lack of higher-ed support for underrepresented students
- Hosted and facilitated 100 person workshops, and organized events for nearly 2,000 association members