KEVIN GREIF (he/him) ✉ kgreif@uci.edu

PROFESSIONAL SUMMARY

Ph.D. candidate in Physics with 5+ years of experience developing and deploying machine learning solutions for complex scientific problems. Specialized in solving statistical problems with machine learning methods, and generative model design including diffusion models. Published researcher with expertise in developing novel ML algorithms, and large-scale deployments using HPC resources. Interested in applied AI research for problems in the natural sciences or related fields.

EDUCATION

University of California, Irvine **2020 - Present (Expected 2026)**
Ph.D. in Physics, Department of Physics and Astronomy — Advisor: Daniel Whiteson
Focus: Machine learning, generative models, applications in particle physics research

University of Notre Dame **2016 - 2020**
B.S. in Physics, Magna Cum Laude — Outstanding Physics Major Award

SKILLS

Machine Learning: Machine learning, transformer-based neural networks, foundation models, hyperparameter optimization, diffusion models
Programming: Python, C++, PyTorch, TensorFlow, scikit-learn, JAX, Git, HPC/GPU computing
Data Science: Large-scale data processing and scientific computing, statistical analysis, data visualization
Research: Published author (NeurIPS, SciPost Physics), peer review, technical writing, scientific communication
Collaboration: Active member of large (1000+ researchers) scientific collaboration, experience working in teams to produce high-quality research results

EXPERIENCE

Machine learning methods for particle physics development **2020 - Present**
University of California, Irvine
- Developed novel latent diffusion models for inverse problems in particle physics, achieving state-of-the-art performance on high-dimensional scientific data (published at NeurIPS 2023)
- Collaborated across academic institutions to spur development of methods for handling complex variable-dimensional data structures (SciPost Physics 2024/2025)
- Contributed to a community comparison study of ML based statistical methods for particle physics (SciPost Physics 2024)
- Presented research at 6+ international physics and machine learning conferences (ML4Jets, CHEP)

Machine learning methods deployment for the ATLAS experiment **2020 - Present**
ATLAS Collaboration at CERN
- Benchmarked, optimized hyper-parameters, and quantified uncertainties for multiple deep learning architectures for classification tasks in particle physics. Improved performance by a factor of 5x over traditional methods
- Created and released open-source datasets and evaluation tools, facilitating reproducibility and community adoption
- Led deployment of ML based method for solving an important high dimensional inverse problem. Required fine-tuning thousands of transformer models on HPC resources
- Produced the first in an entirely new and more-powerful class of particle physics measurements

Research Assistant - Neural Network Architecture Design **2018 - 2020**
University of Notre Dame
- Designed physics-inspired neural network architectures incorporating domain knowledge, achieving improved performance over generic architectures

Additional Leadership & Service
- **ATLAS Early Career Scientist Board (2024-Present)**: Advocate for 1000+ early career scientists within international scientific collaboration, organize career development workshops and networking events
- **Teaching Assistant (2019-2021)**: Taught and mentored 100+ undergraduate students in physics and computational methods courses