Adam Stein
PhD Student — Machine Learning — Programming Languages
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Education

University of Pennsylvania   2021 – present
PhD Computer and Information Science   GPA: 4.0/4.0
Advisors: Prof. Mayur Naik and Prof. Eric Wong

University of California, Los Angeles   December 2020
BS Computer Science, *summa cum laude*   GPA: 4.0/4.0

Research Statement

I aim to improve the safety and trustworthiness of ML models by (1) discovering the concepts learned by a model, (2) designing abstractions to streamline debugging and programming of models, and (3) developing methods to understand changes in data and their impact.

Research Experience

PhD Student, UPenn   2021 – present
Advisors: Prof. Mayur Naik and Prof. Eric Wong
Working in the intersection of ML and programming languages.

Undergraduate Researcher, UCLA   March – June 2020
Advisor: Prof. Todd Millstein
Implemented synthesis of bit-vector programs for a state-of-the-art program synthesis tool.

Summer Intern, UC Berkeley   June – September 2018
Advisor: Prof. John Kuriyan
Designed and evaluated molecular dynamics simulations of a cancer-relevant protein.

Awards

NSF Graduate Research Fellowship   2023 – 2025
UCLA Outstanding Bachelor's in CS   2021 (Awarded to 2/341)
IJCNLP-AACL'23 Area Chair Award (Interpretability and Analysis of Models for NLP)

Publications

Towards Compositionality in Concept Learning
Adam Stein, Aaditya Naik, Yinjun Wu, Mayur Naik, Eric Wong. In submission.

TorchQL: A Programming Framework for Integrity Constraints in Machine Learning [code]
Aaditya Naik, **Adam Stein**, Yinjun Wu, Eric Wong, Mayur Naik. OOPSLA 2024.

Rectifying Group Irregularities in Explanations for Distribution Shift [code]
Adam Stein, Yinjun Wu, Eric Wong, Mayur Naik. arXiv Pre-print 2023.

Relational Query Synthesis ⋈ Decision Tree Learning
Aaditya Naik, Aalok Thakkar, **Adam Stein**, Mayur Naik, Rajeev Alur. VLDB 2024.

Faithful Chain-of-Thought Reasoning [code]
Qing Lyu*, Shreya Havaldar*, **Adam Stein***, Li Zhang, Delip Rao, Eric Wong, Marianna Apidianaki, Chris Callison-Burch. IJCNLP-AACL 2023 (Area Chair Award).

Learning to Select Pivotal Samples for Meta Re-weighting [code]
Yinjun Wu, **Adam Stein**, Jake Gardner, Mayur Naik. AAAI 2023 (Oral Presentation).

Teaching Experience

TA for CIS 547, Program Analysis (University of Pennsylvania, Fall 2023)
TA for CIS 500, Software Foundations (University of Pennsylvania, Fall 2022)
Tutor, Tau Beta Pi (University of California, Los Angeles, 2019)

Skills

Languages/Libraries: Python, Pytorch, C/C++, Java, Spark, Scala, Rust, OCaml, LLVM, Datalog
Tools: Git, GDB, AWS, Docker, Coq, Z3, Souffle