

ALEX STEIN

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RESEARCH OVERVIEW

My research interests cover a range of machine learning topics, including but not limited to: LLM reasoning, adversarial attacks, efficient inference using adaptive compute. I am especially interested in exploring the extent to which LLMs understand context and generalize beyond their training data.

EDUCATION

PhD in Computer Science <i>University of Maryland</i> · Thesis: Adapting Next-Token Prediction for Practical Domains and Training Regimes · Advised by Prof. Tom Goldstein and Prof. John Dickerson	College Park, MD August 2021 - May 2026
Masters of Science, Computer Science <i>University of Maryland</i>	College Park, MD Dec 2024
Columbia University <i>BS Computer Science: Machine Learning Concentration</i> · Minor: Operations Research	New York City, NY May 2016

EMPLOYMENT EXPERIENCE

Two Sigma Investments <i>Quantitative Researcher</i> · Quantitative researcher applying modern machine learning modeling techniques to financial forecasting problems	New York City, NY July 2026-Present
Two Sigma Investments <i>Quant Research PhD Intern, Machine Learning</i> · Summer PhD research internship; returned full-time in 2026	New York City, NY June 2025-Aug 2025
Capital One <i>Applied Research PhD Intern, Behavioral Modeling Team</i> · Applied Researcher focused on transformers for temporal tabular data tasks such as event prediction and time series	McLean, VA June 2024-Aug 2024
University of Maryland <i>Research Assistant</i> · Research assistant in Tom Goldstein's lab exploring the ways in which language models reason in long context settings and other length-generalization tasks	College Park, MD May 2022-May 2026
RBC Capital Markets <i>VP, Quantitative Researcher and Development, Global Equities</i> · Created alpha signals used to predict market direction · Trained predictive models used in production systems for scheduling, liquidity seeking, and routing algorithms · Co-lead rewrite of entire trading system, personally contributing over 10,000 lines of code	New York City, NY Aug 2016-Dec 2021

TEACHING EXPERIENCE

University of Maryland <i>Teacher's Assistant</i> · Analysis of Algorithms (Fall 2021) · Introduction to Machine Learning (Spring 2022) · You I and Generative AI (Spring 2025)	College Park, MD
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TECHNICAL SKILLS, CERTIFICATES AND AWARDS

Computer Languages	Python, Java, Matlab, L ^A T _E X, Q/kDB+
ML Frameworks	Pytorch, Huggingface, Lightning, Pandas, Numpy
Github	https://github.com/alexstein0
Dean and Chair Fellowship	Aug 2021–May 2023
FINRA qualifications exams	Series 7, 57, 63

TALKS

Featurespace research seminar: Event Prediction using Autoregressive Transformers	Jan 2025
UMD ML research group: Intro to Event Prediction using Transformers	Nov 2024
Capital One AI research symposium: Event Prediction with Autoregressive Transformers	Aug 2024
Capital One Behavioral Modeling research group: Event Prediction	July 2024

SELECTED PAPERS AND PREPRINTS

GATES: Self-Distillation under Privileged Context with Consensus Gating

Alex Stein, Furong Huang, and Tom Goldstein

arXiv:2602.20574

A Simple Baseline for Predicting Events with Auto-Regressive Tabular Transformers

Alex Stein, Samuel Sharpe, Doron Bergman, Senthil Kumar, C. Bayan Bruss, John Dickerson, Tom Goldstein, and Micah Goldblum

arXiv:2410.10648

Coercing LLMs to do and reveal (almost) anything

Jonas Geiping, **Alex Stein**, Manli Shu, Khalid Saifullah, Yuxin Wen, and Tom Goldstein

arXiv:2402.14020

Transformers Can Do Arithmetic with the Right Embeddings

Sean McLeish, Arpit Bansal, **Alex Stein**, Neel Jain, John Kirchenbauer, Brian R. Bartoldson, Bhavya Kailkhura, Abhinav Bhatele, Jonas Geiping, Avi Schwarzschild, and Tom Goldstein

The Thirty-eighth Annual Conference on Neural Information Processing Systems

Running Huge Context Windows On Tiny GPUs

Monte Hoover, Ryan Synk, Neel Jain, John Kirchenbauer, **Alex Stein**, Manli Shu, Ramani Duraiswami, and Tom Goldstein

preprint

Algorithm Design for Learned Algorithms

Avi Schwarzschild, Sean Michael McLeish, Arpit Bansal, Gabriel Diaz, **Alex Stein**, Aakash Chandnani, Aniruddha Saha, Richard Baraniuk, Long Tran-Thanh, Jonas Geiping, and Tom Goldstein

preprint

Neural Auctions Compromise Bidder Information

Alex Stein, Avi Schwarzschild, Michael Curry, Tom Goldstein, and John Dickerson

arXiv:2303.00116