Arjan Kohli

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Education

Yale University New Haven, CT

BS / MA Statistics and Data Science; GPA: 3.8, SAT: 1570 *2022 – 2026*

- Coursework: Machine Learning, Data Analysis, Deep Learning, Probability and Stats, Optimization Theory
- Teaching Assistant for S&DS 365/665 Intermediate Machine Learning
- Yale Undergraduate Hedge Fund Association – Director of Quantitative Research
- Yale Undergraduate Capital Partners – AI Venture Capital Principal

London School of Economics and Political Science London, UK

Computational Financial Mathematics + Analysis and Management of Financial Risk *Summer 2023*

Technical Skills

AI, Deep Learning, Python, PyTorch, Scikit-learn, CUDA, C, R, SQL, Machine Learning, Generative AI, Reinforcement Learning, Adversarial AI, Interpretability, Explainable AI, HPC, Data Science, Algorithms, Probability Theory, Statistical Theory, Regression Theory, Spatial Statistics, Mathematical Optimization, NixOS, BigQuery, MLOps

Experience

MirageLabs.dev Washington, DC

Independent Consultant *2024 - Present*

- Consulted for YC-Backed AI safety company on research directions for black-box attacks on voice agents.
- Consulted a $10M digital design agency through modernization and secure AI integration.

United States Federal Government VA

Machine Learning Researcher - TS/SCI/FS Polygraph *2025-2026*

- Developed deep learning, GenAI, and computer vision tools addressing technological threats to the United States.
- Researched and developed multiple adversarial machine learning techniques and methodologies.
- Evaluated security, interpretability, and explainability of deep learning systems.
- Developed supervised and self-supervised object detection vision models to analyze overhead satellite imagery.
- Contributed to research projects on multimodal vision transformer + LLM systems.
- Engaged in collaboration with Intelligence Community and Department of Defense partners.

Antithesis Vienna, VA

Machine Learning Research Intern *Summer 2024*

- Researched self-supervised anomaly detection for autonomous software testing using transformers and RNNs.
- Mathematically derived ideal gradient decay rates for SGD optimizer to improve model test accuracy by 10%.
- Built and deployed a tool incorporating the ML anomaly detector into Google BigQuery workflow.
- Prototyped ML system to quantify 'interestingness' of distributed system behavior to drive vulnerability discovery.

Projects

Dynamic Curvature Optimization for Hyperbolic GCNs - Dr. Zhuoran Yang (Yale) Dec. 2024

- Developed novel optimization methods for learnable manifold curvature in Hyperbolic Graph Convolution Networks, showing 9% improvement over state of the art methods.

Explainable Deep Learning —DeepFRI (Pending Publication in Elsevier) May 2024

- Implemented GradCAM, PGExplainer, Deepfool Perturbation, and Excitation Backpropagation on the Flatiron Institute's Functional Residue Identification model. Discovered spurious correlations classifying protein function.

Defensive Stochastic Activation Pruning on Deep Learning Classifier - Dr. Rex Ying (Yale) Apr. 2024

- Demonstrated efficacy of various stochastic activation pruning approaches on ResNet-18 to defend against adversarial image perturbation attacks. Tested model with proven efficacy against FGSM and PGD attacks.

INP 558 Algorithmic Decoding of the Brain with Machine Learning May 2023

- Built machine learning system to predict viewed movie content from viewers' fMRI brain activity.

Stanford Treehacks: Split + Optionwise (Fintech Track) - 6th place Feb. 2023

- Created Split: a universal payment processing app to simplify cost-splitting.