

Dhruv Singal

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Work Experience

X, The Moonshot Factory (Google X)

Mountain View, US

AI/ML/Quant PhD Resident

July 2023 - Current

- Confidential Project: Financial Economics of Carbon Markets
 - Responsible for data analyses (ML, NLP, financial engineering), shaping experiments and prototyping solutions
- Confidential Project: Generative AI and Financial Stochastic Modeling
 - Integrating cutting-edge LLMs into traditional financial modeling analyses; worked on end-to-end prototyping and filed IP at USPTO

Capital Fund Management International Inc.

New York, US

Hosted Quant Researcher

May 2022 - May 2023

- Worked on an academic project studying linkage between international trade flows and international capital flows
- Produced novel firm-country level insights through daily data on global universe of corporate bond issuances from Bloomberg and Reuters with granular US trade shipments

BigData Experience Lab, Adobe Research

Bengaluru, India

Research Associate

Jun 2016 - Aug 2018

Research Intern

May 2015 - Jul 2015

- Published novel research in fields spanning machine learning, computer vision, data mining, marketing
- Generated IP—8 patents accepted at USPTO—in collaboration with product teams across digital advertising, document reader and creative cloud
- Integrated research code with real-time big data production systems; wrote lightweight code for deep learning product applications

Education

Columbia Business School

New York, US

PhD in Finance (Quantitative Economics and Econometrics)

2018–2024

- Research Interests:** Asset Pricing, Macroeconomics, Information Economics, International Finance
- Selected Courses:** Empirical Asset Pricing, Asset Pricing Theory, Continuous Time Finance, Time Series Econometrics, Macroeconomics

Indian Institute of Technology Kanpur

Kanpur, India

BTech in Computer Science

2012–2016

- Selected Courses:** Probabilistic Machine Learning, Machine Learning Techniques, Data Structures and Algorithms, Advanced Algorithms

Selected Research Articles (complete list on webpage)

Valuing Financial Data

R&R at *The Review of Financial Studies*; joint with M Farboodi, L Veldkamp and V Venkateswaran

Ongoing

- Quantified a macroeconomic model with information frictions using multiple regression
- Processed financial data including I/B/E/S analyst forecasts to trace the demand curve for investors in market factor portfolios
- Produced novel evidence on the role of market illiquidity and investor heterogeneity in valuing various financial data series
- Winner of the **SFI Outstanding Paper Award, 2022**

Droughts and Asset Prices

Working Paper; joint with O Giesecke and J Goldenring

Ongoing

- Used tools from empirical asset pricing and real estate finance to study the impact of droughts on farmland valuation in California
- Integrated analysis of data spanning 80M land transactions, various geospatial administrative datasets and satellite imagery
- Implemented state-of-the-art repeat sales indices including the S&P Case-Shiller index to estimate market beliefs about valuation

Show and Recall: Learning What Makes Videos Memorable

IEEE International Conference on Computer Vision Workshops;

2017

joint with S Shekhar, H Singh, M Kedia and A Shetty

- Implemented an ensemble machine learning model using deep learning and canonical computer vision features
- Designed and maintained a responsive MEAN stack web application for crowdsourcing ground truth data

Skills

Programming

Proficient in Python (Pandas, GeoPandas, NumPy, Scikit-learn), Matlab, C/C++, Stata, SQL

Prior experience with TensorFlow, Keras, R, Apache Hive, Apache Spark, OOP (Ruby, Java), functional (Oz, Erlang)

Web Development

Prior experience with HTML/CSS, JS, MEAN stack, ReactJS

Miscellaneous

GNU/Linux, Shell scripting, \LaTeX , Git, Microsoft Office