Dhruv Singal

+1 (646) 853-9739 | dhruv.singal@columbia.edu | www.dhruvsingal.com | www.linkedin.com/in/singaldhruv | Google Scholar

Work Experience

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 (finetuning, RAG, downstream embeddings) 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*

- Produced novel firm–country level quantitative insights through semi-high frequency data on international corporate bonds from Bloomberg and Reuters, and granular 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 collabration with product teams across digital advertising, document reader and creative cloud
- Integrated research code with real-time big data production systems, upstreaming into deep learning product applications

Education

Columbia Business School *New York, US*

PhD in Finance (Quantitative Economics and Econometrics, GPA 9.6/10) *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 (GPA: 9.5/10) *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;
joint with S Shekhar, H Singh, M Kedia and A Shetty *2017*

- 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