

# John Cai

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## EDUCATION

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- **Princeton University** Princeton, New Jersey, USA  
*Master in Finance, Financial Mathematics; GPA: 4.00/ 4.00* Aug 2019 – Jun 2020
  - **Relevant Courses:** Machine Learning and Pattern Recognition, Natural Language Processing, Deep Learning Networks (PhD), Advanced Computer Vision (PhD), Reinforcement Learning (PhD), Statistical Analysis of Financial Data, Computational Finance in C++, Stochastic Calculus, Financial Econometrics
- **University of Cambridge** Cambridge, UK  
*Bachelor of Arts, Economics; Triple First Class Honours* Oct 2016 – Jun 2019
  - **Relevant Courses:** Econometrics, Mathematics, Statistics, Functional Programming (PKU Exchange)
  - **Dissertation:** Predicting Recessions using Uncertainty-Aware Natural Language Processing and Factor Models

## WORK EXPERIENCE

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- **Snap Inc.** Santa Monica, CA  
*Applied Research Scientist, Engineering* Nov 2021 - Present
  - Built a causal inference dashboard based on causal graph learning from the results of past A/B tests
  - Developed a framework to integrate new randomization IDs and reduce false positive rates by 5%
- **Singapore Armed Forces** Singapore  
*Corporal, Military Police* Aug 2020 - Oct 2021
  - Completed mandatory military service. Created Power BI dashboards to monitor and analyze safety trends.
- **Government Technology Agency** Singapore  
*Machine Learning Intern, Artificial Intelligence Platforms* May 2020 - Jul 2020
  - Engineered new data fields and performed analysis in PySpark and SQL to forecast the COVID labour market.
  - Deployed a machine learning recommender system that would improve click through rate by around 3%.
- **Smart Nation and Digital Government Office** Singapore  
*Digital Strategy Intern* Jun 2018 – Aug 2018
  - Devised a framework to rank all governments apps. Presented a proposal that will make \$100m of cost savings.
  - Analyzed financial transaction data to identify policies that can reduce cost and improve e-payment adoption.
- **University of Cambridge** Cambridge, UK  
*Econometric Research Assistant* Dec 2017 - Jan 2018
  - Performed econometric research for Prof Toke Aidt on the Fiscal Implications of Voting Patterns in the UK.

## RESEARCH PUBLICATIONS AND PROJECTS

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- **Domain Agnostic Meta Score-based Learning (CVPR 2021 L2ID):** Introduced a novel transfer-learning algorithm using a score-based metric space that beats state-of-the-art methods on medical and satellite images.
- **Cross-Domain Few-Shot Learning (CVPR 2020 VL3):** 2nd in the [CDFSL Challenge](#) against established AI teams. Developed a meta learning algorithm that generalized well on diverse image domains. Oral Presentation at CVPR VL3
- **NLP Event-Driven Stock Price Prediction:** Utilized OpenIE to parse relation tuples followed by a deep CNN to extract short-term and long-term features from news articles, which are then used to predict stock price movements.

## SKILLS AND INTERESTS

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- **Programming:** Python, R, C++, SQL, Javascript/ Node.js, Haskell, MATLAB, Stata, HTML/CSS, Bash
- **Tools:** PyTorch, TensorFlow, Keras, FastAI, PySpark, OpenCV, NLTK, Transformers, Heroku, Docker, Kubernetes, sklearn, NumPy, FastAPI, Shiny, seaborn, ggplot2, Flask, React, Gatsby, PostgreSQL, MongoDB, VSCode, Jupyter, Git
- **Cloud Computing:** AWS (EC2, S3, Lambda, DynamoDB), GCP (BigQuery, Dataproc, Kubernetes, Compute Engine)
- **Academic Interests:** Graph Neural Networks, Computer Vision, Applied Statistics, Causal Inference, MLOps
- **Other Interests:** Hiking, Skiing, Boxing (Trained with University team), Improvised Theatre