

# John Cai

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## EDUCATION

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- **Princeton University** Princeton, New Jersey, USA  
*Master in Finance, Financial Engineering; 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, Corporate Finance
- **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:** I use NLP to study if economic uncertainty can predict recessions. I program web-scrappers to retrieve news using Selenium/ BeautifulSoup and quantify uncertainty using MaxEnt models. Invited to publish.

## RESEARCH PUBLICATIONS AND PROJECTS

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- **Cross-Domain Few-Shot Learning (Oral Presentation at CVPR 2020 VL3):** Implemented Graph Neural Networks and introduced a novel meta transfer-learning algorithm that achieved 2nd in the competition. [Github](#)
- **NLP Event-Driven Stock Price Prediction:** Utilised 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.
- **Visual Question Answering:** Multi-modal question answering for open-ended questions that integrates deep residual networks for image feature extraction and bidirectional LSTM for natural language feature extraction.
- **Facebook Analytics Challenge:** Team 1st. Analyzed a messenger dataset to identify app health and user engagement trends. Presented key findings to Facebook data scientists at Facebook London.

## WORK EXPERIENCE

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- **Government Technology Agency** Singapore  
*Computational Scientist Intern, Artificial Intelligence Platforms* May 2020 - Jul 2020
  - Engineered new data fields and performed analysis in PySpark to forecast the labour market during COVID.
  - Performed back-testing and A/B testing and deployed a content-based improvement to the ML recommender system that would improve job application rate by around 3%.
  - Utilized LDA and NLP to automatically extract insights from user search trends and skills in demand, and used SQL to produce a Redshift dashboard that automated policy-maker workflows.
- **Ministry of Defence** Singapore  
*Research Analyst Intern* Aug 2018 – Sep 2018
  - Analyzed implications of regional geopolitical events. Ranked as the top performing intern by senior management.
  - Devised a threat analysis matrix that was adopted by the analyst team. Proposed strategies to incorporate NLP.
- **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.
  - Formulated policies on digital payments by liaising with financial institutions and the central bank.
  - Analyzed financial transaction data to identify policies that can reduce cost and improve E-payment adoption.
- **Faculty of Economics, 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.
- **Arcstone Incorporated** Singapore  
*Business Operations and Strategy Intern* Jul 2017 - Sep 2017
  - Conducted competitor and cashflow analysis in Excel that helped secure an official partnership with McKinsey. Arcstone was chosen out of 200 digital manufacturing start-ups that applied to provide the IoT SaaS product.

## SKILLS AND INTERESTS

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- **Programming:** Python, R, C++, Haskell, SQL,  $\text{\LaTeX}$  **Technologies:** PyTorch, TensorFlow, Spark
- **Interests:** Boxing (Trained with Uni Team), Theatre, Skiing, Hiking, Data Science