

# Jonathan Liu

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## Education

### University of Chicago

Chicago, IL

- Bachelor's Degree in Economics with Specialization in Data Science Expected 06/2021
- **Relevant Coursework:** Machine Learning, Big Data Tools in Economics, Data Science, Financial Accounting, Econometrics, Applied Microeconometrics, Computer Science, Economics of Sports, Statistical Models/Methods, Linear Algebra, Multivariable Calculus, Social Sciences Inquiry, Investments, Game Theory
- **GPA:** 3.87/4.00
- **Relevant Awards:** Dean's List (2017-2018, 2018-2019, 2019-2020)

## Research Interests

I am very interested in applied information technology and data science. In particular, I am passionate about analyzing data using cutting-edge technology. I am also highly interested in sports analytics, sports betting, finance, and other business applications. In my free time, I enjoy analyzing strategies and looking for market inefficiencies in the sports betting and finance world. In addition, I love exploring various strategies for fantasy sports.

## Research Experience

### Momentum Trading Strategies with Robinhood

08/2020-09/2020

*Research Assistant under Freakonomics coauthor Professor Steven Levitt*

- Analyzed momentum trading strategies of various equities involving user activity on Robinhood
- Collected hourly data on equity prices for 8500+ tickers and Robinhood trading volume
- Back tested the performance of different trading strategies whenever there are sharp changes in trading volume on the app

### The Substitution Theory in the NBA

01/2020-03/2020

*Course Research Project for Applied Microeconometrics under Professor Juanna Joensen*

- Replicated Todd D. Kendall's study in 2004 investigating whether or not NBA players are more inclined to misbehave on the court as their salaries increase because they are less substitutable
- Collected NBA salary data and relevant player stats for 1000+ players from HoopsHype and Doug's Stats
- Analyzed the plausibility of the substitution theory for the 1996-1997 to 2000-2001 seasons as well as the 2018-2019 season

### Predicting All-NBA Selections

10/2019-11/2019

*Independent Research Project*

- Used machine learning to predict how many All-NBA selections active players in the 2019-2020 season will win in their careers
- Used Python to scrape seasonal stats on 3900+ players who have completed their NBA careers from Basketball-Reference
- Tested various regression methods to train on the historical data
- Used the best-performing model to predict All-NBA selections on current NBA players

### The Superstar Effect in the NBA

03/2019-06/2019

*Course Research Project for The Economics of Sports under Professor Allen Sanderson*

- Measured the impact of superstars on fan attendance in the NBA from the 2014-2015 to 2018-2019 seasons
- Collected players stats and game attendance data from Basketball-Reference and ESPN respectively
- Analyzed the impact of All-Stars and regular season MVP's on home and away game turnouts

### Homecourt Advantage in the NBA

01/2018-03/2018

*Course Research Project for Social Sciences Inquiry under Professor Milena Ang*

- Analyzed how the effect of homecourt advantage in the NBA differs per team depending on overall team strength (i.e., regular season win percentage)
- Collected data on NBA team statistics from the 2013-2014 to 2017-2018 seasons
- Research paper accepted for presentation at the 2019 International Information Management Association (IIMA) Conference
- Won the 2019 IIMA Outstanding Scholarship

## Professional Experience

### Eoch Group

Chicago, IL

*Data Science Intern*

06/2020-09/2020

- Worked with *Freakonomics* co-author Steven Levitt to improve on machine learning models to bet on horse races
- Scraped and analyzed the betting history of all users on derbywars.com and horsetourneys.com from 2015-2020
- Conducted research on the Daily Racing Form to build models predicting the win probability and final betting odds of every horse in every race

**SimpleBet***Sports Betting Analyst Intern***New York, NY**  
06/2019-09/2019

- Used Python to scrape sports betting odds for every game for the MLB, NBA, and NFL from 2010-2019
- Created and maintained a large database of those odds using SQL
- Leveraged industry knowledge to help the data science team improve its betting models
- Conducted research on the sports betting industry to stay up to date on new developments

**University of Chicago's Math Department***Teaching Assistant***Chicago, IL**  
09/2018-03/2019

- Assisted in teaching a proof-based calculus sequence (MATH 15200-15300)
- Collaborated with the instructor weekly to discuss course material and teaching strategies
- Supported development of students by holding office hours twice a week
- Graded weekly problem sets for 50+ students

**Arbor Tutors***Online Tutor***Chicago, IL**  
02/2018-01/2019

- Tutored 15 high school and college students for 2-5 hours a week
- Subjects included: Algebra, Geometry, Pre-Calculus, Calculus, Discrete Mathematics, ACT/SAT Prep

**Extracurricular Experience**

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**University of Chicago Sports Analytics Club***Active Board Member***Chicago, IL**  
01/2020-Present

- Planned networking events from professional sports teams including the Los Angeles Dodgers and the Kansas City Royals
- Conduct empirical research to make daily fantasy basketball drafts

**University of Chicago International Leadership Council Entrepreneurship Sector***Senior Member***Chicago, IL**  
10/2018-03/2020

- Lead weekly meetings where I worked with my team on our startup ideas as well as offered feedback to other teams' ideas
- Cofounded Motem – a platform connecting less-popular Instagram models (i.e., between 1K-50K followers) to companies willing to offer sponsorships
- Consulted for HeadCam – a group that designed a headband camera that records sporting events from the player's perspective (chess, poker, biking, billiards, basketball etc.)

**University of Chicago Chess Club***Active Member***Chicago, IL**  
09/2017-Present

- Play for University of Chicago's chess team and have 2100 blitz and bullet ratings on chess.com
- Facilitate a friendly play-and-learn environment in the club
- Former top-ranked 4-player chess player on chess.com

**Skills and Interests**

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**Languages:** English (native speaker), Mandarin Chinese (native speaker), Spanish (conversational)**Computing Skills:** SAS (Certified Base Programmer); Experienced in Excel, Python, R, and SQL**Interests:** Chess, Poker, Basketball, Baseball, Football, Soccer, Piano