

Allen Wu  
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## EDUCATION

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**Stanford University** Stanford, CA  
*MS, Management Science & Engineering. GPA: 3.92/4.00.* 2016 – 2018

**University of Chicago** Chicago, IL  
*BA, Mathematics. GPA: 3.89/4.00.* 2011 – 2015  
*Honors: Phi Beta Kappa, Dean's List, National Merit Scholarship*

## COURSEWORK

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**Computer Science:** Mining Massive Data Sets, Deep Learning, Algorithmic Techniques for Big Data, Design and Analysis of Algorithms, Decision Making Under Uncertainty, General Game Playing

**Decision Theory:** Risk Analysis, Stochastic Modeling, Financial Risk Analytics, Professional Decision Analysis

## EXPERIENCE

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**Wizards of the Coast** Renton, WA  
*Game Design Contractor* 2017 – 2018

- **Game Development:** Provided insight on the entertainment value, competitive balance, and replayability of new expansions for Magic: the Gathering, a strategy card game played by over 10 million people.

**Stanford** Stanford, CA  
*Course Assistant, Introduction to Decision Making* Summer 2017

- **Teaching:** Wrote and graded homework assignments and exams, held office hours, and advised students on a course project where they consulted with businesses and applied the tools taught in class.

**Sandia National Laboratory** Albuquerque, NM  
*Intern, Resilience and Regulatory Effects* Summer 2014

- **Modeling Research:** Researched new economic models to evaluate their strengths and weaknesses.

## PROJECTS

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**Probabilistic Risk Analysis of Colorado Wildfires** Spring 2018

- Worked with officials, wildfire experts, and firefighters to determine the costs and benefits of implementing the International Wildland-Urban Interface Codes in Jefferson County, Colorado.
- Designed and implemented a Markov time-series model to predict wildfire behavior and damages.

**SBA Loan Risk Analysis** Winter 2017

- Evaluated the risks of asset-backed securities and portfolios of loans using linear and logistic regression, neural networks, and hazard rate modeling.
- Compared the predictions, accuracy, sensitivity, and specificity of the different approaches.

**Playing Blackjack with Deep Q-Learning** Winter 2017

- Implemented a blackjack state-machine following typical casino conventions.
- Constructed and trained a deep  $Q$ -network in PyTorch to determine the optimal blackjack policy.

**Magic: the Gathering Hand Simulation** Winter 2017

- Developed a Monte Carlo simulation framework for generating and interpreting opening hands, using it to determine how consistent particular decks are and to find optimal deck configurations.

## SKILLS

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**Fluent:** Python (NumPy, SciPy, PyTorch, Pandas, Matplotlib), Java, Excel

**Conversational:** Clojure, Julia, TensorFlow, R, Stata, Spark, SQL, Mandarin

**Communication:** L<sup>A</sup>T<sub>E</sub>X, Markdown, Google Suite, Microsoft Office

## INTERESTS

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**Magic: the Gathering**

- Winner of Pro Tour 25<sup>th</sup> Anniversary (2018) and Grand Prix Albuquerque 2016.
- Ranked #15 on the live Elo leaderboard, with a rating of 2118.
- Built models to analyze tournament results, improve in-game decision-making, and forecast player behavior.
- Published a series of articles on channelfireball.com, one of the top Magic content websites.