

# Zachary Robertson

GRADUATE STUDENT

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*"Play is the highest form of research."*

## Education

### Stanford

PH.D. IN COMPUTER SCIENCE

- School of Engineering Fellowship
- EDGE Fellowship
- NSF Honorary Mention

Stanford, U.S.

Sept. 2022 -

### University of Illinois at Urbana-Champaign

MS IN COMPUTER SCIENCE

- Thesis on Performance Metric Elicitation
- GEM fellowship
- Wing Kai Cheng Fellowship

Champaign, U.S.

Aug. 2020 - May. 2022

### University of Chicago

B.S. IN COMPUTATIONAL AND APPLIED MATH

- Graduated with Honors
- Jackie Robinson Scholarship

Chicago, U.S.

Oct. 2016 - Present

### LoneStar Community College

ASSOCIATE DEGREE IN SCIENCE

- President's List
- Home schooled with dual enrollment at local community college

Spring, TX, U.S.

Oct. 2013 - May. 2016

## Skills

<b>Programming</b>	Python, LaTeX, C++, Haskell
<b>Machine Learning</b>	PyTorch, TensorFlow
<b>Math</b>	Analysis, Linear Algebra, Statistical Learning Theory, Optimization, Statistics

## Experience

### Sanmi Koyejo's Research Group at Stanford

RESEARCH ASSISTANT

- Investigating how to learn from human preferences
- Interested in designing algorithms that incentivizes trust-worthy behavior from humans and machines

Stanford, U.S.

Sept. 2022 - Present

### Google

STUDENT RESEARCHER

- Designing tractable surrogates for welfare maximization
- Applications to the training of predicted click-through-rates models used in Ads

Mountain View, U.S.

Apr. 2022 - Aug. 2022

### Lam Research

RESEARCH INTERN

- Lam is a major player in the design, manufacture, marketing, and service of semiconductor processing equipment used in the fabrication of integrated circuits
- Applied knowledge of reinforcement learning and machine learning to optimize the production flow of semi-conducting wafers
- Used Python, Open AI Gym, and Tensorflow

Fremont, U.S.

June 2020 - March 2021

### Robot Intelligence through Perception Lab at TTIC

RESEARCH ASSISTANT

- Implemented a model to do sparse-depth completion on a robot using PyTorch, Docker, and SLURM.
- Trained a simulated UR5 arm to pick up blocks from a table with natural language using PyTorch, OpenGym, and Mujoco.
- Engaged in theoretical study of reinforcement learning using regret based approach for Honor's Thesis

Chicago, U.S.

Jun. 2019 - June 2020

## Exo-Planets Group at UChicago

RESEARCH ASSISTANT

Chicago, U.S.

June 2017 - Oct. 2018

- Worked on increasing calibration precision using machine learning (EM and pattern matching) to help align known spectra to those reported on the spectrograph pixel output
- Published a paper describing more efficient calibration software for spectrographs

## Allen and Company LLC.

ANALYST

New York, U.S.

June 2018 - Aug. 2018

- Allen and Co. is a boutique investment banking firm that has advised on deals such as Facebook's acquisition of WhatsApp (2014) and hosts the annual Sun Valley Conference in Idaho
- Brought domain knowledge to help evaluate quantum computing startups and cryptocurrencies, automated formulaic internal reporting, and analyzed investor sentiment

## Algorithmic Dynamics Lab

SOFTWARE CONTRIBUTOR

Stockholm, Sweden

June 2018 - Aug. 2018

- Developed an algorithm to approximately calculate algorithmic complexity for array data structures using Python.
- Completed remote course-work on algorithmic information dynamics hosted by the Santa Fe Institute and taught by Hector Zenil

## Honors & Awards

2022	<b>Recipient</b> , School of Engineering Fellowship	Stanford
2022	<b>Recipient</b> , EDGE Fellowship	Stanford
2021	<b>Honorary Mention</b> , NSF GRFP Fellowship	UIUC
2021	<b>Recipient</b> , Wing Kai Cheng Fellowship	UIUC
2020	<b>Recipient</b> , GEM Fellowship	UChicago
2018	<b>Recipient</b> , Dean's List	UChicago
2017	<b>Winner</b> , Illinois Blockchain Hackathon	Chicago/Urbana
2016	<b>Scholar</b> , Jackie Robinson Foundation	New York

## Extracurricular Activity

### Alignment Newsletter

CONTRIBUTOR

CHAI

Sept. 2019 - Present

- Writes summaries and opinions on advances in machine learning for the Alignment Newsletter
- Over 1k subscribers

### Inter-House Council

CHAIR OF PHILANTHROPY COMMITTEE

UChicago

Oct. 2016 - June 2018

- Planned and implemented an update to the Saturday night meal pilot program for students with financial need.
- Used a portion of the saved money to help feed local people in need.

### Chicago Maroon

DATA ANALYSIS & WRITER

UChicago

Oct. 2016 - 2018

- Conducted student polls and analyzed the results

## Publications and Talks

1. Zachary Robertson, Hantao Zhang, and Sanmi Koyejo. Cooperative inverse decision theory for uncertain preferences. *AISTATS*, 2023
2. Zachary Robertson, Hantao Zhang, and Sanmi Koyejo. Probabilistic performance metric elicitation. *1st Workshop on Human and Machine Decisions (WHMD 2021) at NeurIPS 2021*, 2022
3. Zachary Robertson and Matthew Walter. Concurrent training improves the performance of behavioral cloning from observation. *arXiv preprint arXiv:2008.01205*, 2020
4. Julian Stürmer, Andreas Seifahrt, Zachary Robertson, Christian Schwab, and Jacob L Bean. Echelle++, a fast generic spectrum simulator. *Publications of the Astronomical Society of the Pacific*, 131(996):024502, 2018