



# Ángel Alexander Cabrera

I am a PhD student in the [Human Computer Interaction Institute \(HCII\)](#) at Carnegie Mellon University, advised by [Adam Perer](#) and [Jason Hong](#).

My research focus is broadly **human-centered AI**, specifically in applying techniques from **HCI** and **visualization** to help people develop machine learning models that are better aligned with human values. I am supported by a [NSF Graduate Research Fellowship](#).

Before CMU, I graduated with a B.S. in Computer Science from Georgia Tech, where I worked with [Polo Chau](#) and [Jamie Morgenstern](#). I've spent time at  Microsoft Research and a few summers as a software engineering intern at  Google working on Google Maps, Cloud Dataflow, and Android Auto.

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 [GitHub](#)

 [Google Scholar](#)


## Education

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|---------------------------|--|
| August 2019<br>- Present  | <b>PhD in Human-Computer Interaction (HCI)</b><br><i>Carnegie Mellon University</i>  |
| August 2015<br>- May 2019 | <b>B.S. in Computer Science</b><br><i>Georgia Institute of Technology</i><br>Concentration in intelligence and modeling/simulation.<br>Minor in economics. |
| Fall 2017                 | <b>Sciences Po - Paris, France</b><br>Exchange program with a focus on economics and political science.  |

## Awards and Fellowships

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|----------|--|
| May 2019 | <b>National Science Foundation Graduate Research Fellowship (NSF GRFP)</b><br>Three-year graduate fellowship for independent research. Full tuition with an annual stipend of \$34,000.<br> <a href="#">Website</a> |
| May 2019 | <b>Love Family Foundation Scholarship</b><br>Co-awarded the \$10,000 scholarship for the undergraduate with the most outstanding scholastic record.  |



August 2015  
- May 2019

### Stamps President's Scholar

*Georgia Tech and the Stamps Family Charitable Foundation*

Full ride scholarship with \$15,000 in extracurricular funding awarded to 10 students (27,270 applicants).



February 3, 2018

### The Data Open Datathon

*Correlation One and Citadel Securities*

Placed third and won \$2,500 for creating a ML system to predict dangerous road areas.



## Industry Experience

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May 2020  
- Present

### Microsoft Research

*Research Intern*

Working with [Steven Drucker](#) on xAI and visualization.



May 2018  
- August 2018

### Google

*Software Engineering Intern*

Researched and prototyped improvements for automated driver assistance systems and hyperlocal weather prediction for the next generation of Android Auto.



Android Auto

Java

C++

Protocol Buffers

May 2017  
- August 2017

### Google

*Software Engineering Intern*

Created an anomaly detection and trend analysis system for Google's data processing pipelines.

Apache Beam/Cloud DataFlow

Java

C++

SQL

May 2016  
- August 2016

### Google

*Engineering Practicum Intern*

Built an analytics platform for monitoring and catching erroneous edits to Google Maps.

Go

BigQuery

JavaScript

## Research Experience

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August 2019  
- Present

### Carnegie Mellon Human Computer Interaction Institute (HCII)

*Graduate Research Assistant*



January 2018  
- May 2019

**Polo Club of Data Science**  
*Undergraduate Research Assistant*



September 2015  
- May 2017

**PROX-1 Satellite**  
*Flight Software Lead and Researcher*

Led a team of engineers in developing the software for a fully undergraduate-led satellite mission.



## Refereed Publications

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October 2019

**FairVis: Visual Analytics for Discovering Intersectional Bias in Machine Learning**  
Ángel Alexander Cabrera, Will Epperson, Fred Hohman, Minsuk Kahng, Jamie Morgenstern, Duen Horng (Polo) Chau

*IEEE Conference on Visual Analytics Science and Technology (VAST). Vancouver, Canada, 2019.*



## Workshops, Demos, Posters, and Preprints

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2020

**Regularizing Black-box Models for Improved Interpretability**

Gregory Plumb, Maruan Al-Shedivat, Ángel Alexander Cabrera, Adam Perer, Eric Xing, Ameet Talwalkar

*Under Review. , 2020.*

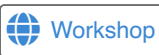


May 2020

**"Public(s)-in-the-Loop": Facilitating Deliberation of Algorithmic Decisions in Contentious Public Policy Domains**

Hong Shen, Ángel Alexander Cabrera, Adam Perer, Jason Hong

*Fair & Responsible AI Workshop at CHI. Hawaii, USA, 2020.*



May 2019

**Discovery of Intersectional Bias in Machine Learning Using Automatic Subgroup Generation**

Ángel Alexander Cabrera, Minsuk Kahng, Fred Hohman, Jamie Morgenstern, Duen Horng (Polo) Chau

*Debugging Machine Learning Models Workshop (Debug ML) at ICLR. New Orleans, Louisiana, USA, 2019.*



June 2018

## Interactive Classification for Deep Learning Interpretation

Ángel Alexander Cabrera, Fred Hohman, Jason Lin, Duen Horng (Polo) Chau

Demo at IEEE Computer Vision and Pattern Recognition (CVPR). Salt Lake City, Utah, USA, 2018.



## Teaching

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Fall 2016

### CS1332 - Data Structures and Algorithms

Spring 2017

*Undergraduate Teaching Assistant*

Spring 2018

Taught a 1 1/2 hour weekly recitation, graded tests and homework, and helped create assignments.

Fall 2016

### GT 1000 - First-Year Seminar

*Team Leader*

Designed a class curriculum for incoming first years and helped lead a weekly seminar class.

## Service

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### Student Volunteer

October 2019

IEEE Visualization Conference (VIS)

January 2019

ACM Fairness, Accountability, and Transparency (FAT\*)

### Reviewer

2020

IEEE VIS

2019

IEEE Transactions on Visualization and Computer Graphics (TVCG)

2019

ACM Transactions on Interactive Intelligent Systems (TiS)

## Press

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2020

"New forecasting data could help public health officials prepare for what's next in the coronavirus pandemic" - *CNN*

2020

"Facebook and Google Survey Data May Help Map Covid-19's Spread" - *Wired*

2020

"Carnegie Mellon Unveils Five Interactive COVID-19 Maps" - *Carnegie Mellon*

2020

"Visualizing Fairness in Machine Learning" - *Data Stories Podcast*

2019

"Alex Cabrera Wins Love Family Foundation Scholarship" - *GT SCS*

2019

"Georgia Tech Satellite Successfully Launched Into Space" - *Georgia Tech*

2018

"Datathon Challenges Students to Create Solutions to Real-World Problems" - *GT SCS*

## Projects

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- Spring 2020 **COVIDcast Visualization of COVID Symptoms**  
An interactive visualization for multiple indicators of COVID symptoms collected by the CMU Delphi research group.  
[Website](#)
- Fall 2018 **ICLR'19 Reproducibility Challenge**  
*Generative Adversarial Models for Learning Private and Fair Representations*  
Implemented and reproduced an ICLR'19 submission using GANs to decorrelate sensitive data.  
[GitHub](#)
- Spring 2018 **Georgia Tech Bus System Analysis**  
System that combines Google Maps and graph algorithms to enable navigation for GT buses.  
[Poster](#) [Class](#)
- Spring 2014 **CTF Resources**  
Guide and resources for capture the flag (CTF) competitions with over 1,000 stars on GitHub.  
[Website](#) [GitHub](#)

## Selected Classes

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- Spring 2020 Human Judgement and Decision Making
- Fall 2019 [Applied Research Methods](#)
- Fall 2018 [Deep Learning](#)
- Spring 2018 [Data and Visual Analytics](#)
- Fall 2017 Money and Banking
- Spring 2017 [Machine Learning](#)
- Spring 2017 [Computer Simulation](#)
- Spring 2017 Honors Algorithms

## Skills

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### Languages

[English - Native](#)[Spanish - Native](#)[French - Conversational \(B1\)](#)

### Programming Languages

[Java](#)[Javascript](#)[Python](#)[C/C++](#)[SQL](#)[Go](#)

### Technologies

Machine Learning

Full Stack Development

React

Svelte

Vega

D3

PyTorch

Cloud Dataflow/MapReduce

Amazon Mechanical Turk

Last updated July 3, 2020.

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