



# 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.

 [cabreraalex.com](http://cabreraalex.com)

 [cabrera@cmu.edu](mailto:cabrera@cmu.edu)

 [@a\\_a\\_cabrera](https://twitter.com/a_a_cabrera)

 [GitHub](#)

 [Google Scholar](#)


## Education

---

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

## Awards and Fellowships

---

- |          |  |
|----------|--|
| 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.<br> <a href="#">Announcement</a>                                |

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 incoming students.



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

---

May 2020  
- August 2020

### Microsoft Research

Research Intern

Worked on behavioral model understanding with [Steven Drucker](#) and [Marco Tulio Ribeiro](#).



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.

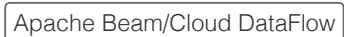


May 2017  
- August 2017

### Google

Software Engineering Intern

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

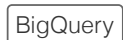


May 2016  
- August 2016

### Google

Engineering Practicum Intern

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



## Academic Research Experience

---

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

---

- October 2020 **Designing Alternative Representations of Confusion Matrices to Support Non-Expert Public Understanding of Algorithm Performance**  
[Hong Shen](#), [Haojian Jin](#), [Ángel Alexander Cabrera](#), [Adam Perer](#), [Haiyi Zhu](#), [Jason Hong](#)  
*ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW). Virtual, 2020.*



- 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

---

- 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

---

- Fall 2016 **CS1332 - Data Structures and Algorithms**  
Spring 2017 Undergraduate Teaching Assistant @ Georgia Tech  
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 @ Georgia Tech  
Designed a class curriculum for incoming first years and helped lead a weekly seminar class.

## Mentoring

---

- Spring 2020 **Abraham Druck**  
- Present B.S. in Mathematical Sciences, Carnegie Mellon  
Crowdsourced discovery of ML blind spots for image captioning.
- Fall 2020 **CMU AI Mentoring Program**

## Service

---

### Student Volunteer

- October 2019 IEEE Visualization (VIS)  
January 2019 ACM Fairness, Accountability, and Transparency (FAT\*)

### Reviewer

- 2020 IEEE Visualization (VIS)  
2019, 2020 IEEE Transactions on Visualization and Computer Graphics (TVCG)  
2019 ACM Transactions on Interactive Intelligent Systems (TiiS)

## Press

---

- 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

---

- 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

---

- PhD Human Judgement and Decision Making  
[Applied Research Methods](#)
- B.S. [Deep Learning](#)  
[Data and Visual Analytics](#)  
[Machine Learning](#)  
[Computer Simulation](#)  
Honors Algorithms

## Skills

---

### Languages

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

### Programming Languages

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

### Technologies

[Machine Learning](#)[Full Stack Development](#)[PyTorch](#)[D3](#)[Vega](#)[Svelte](#)[React](#)[Jupyter Widgets](#)[AWS/Azure/Google Cloud](#)[Cloud Dataflow/MapReduce](#)[Amazon Mechanical Turk](#)

Last updated September 18, 2020.

---