



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

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

Awards and Fellowships

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| May 2019 | National Science Foundation Graduate Research Fellowship (NSF GRFP)
Three-year graduate fellowship for independent research. Full tuition with an annual stipend of \$34,000. |
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 [Website](#)

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| May 2019 | Love Family Foundation Scholarship
Co-awarded the \$10,000 scholarship for the undergraduate with the most outstanding scholastic record. |
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 [Announcement](#)

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

May 2020
- August 2020

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.



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.



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



Teaching

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.

Mentoring

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

Service

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 (TiIS)

Press

2020	"New forecasting data could help public health officials prepare for what's next in the coronavirus pandemic" - <i>CNN</i>
2020	"Facebook and Google Survey Data May Help Map Covid-19's Spread" - <i>Wired</i>
2020	"Carnegie Mellon Unveils Five Interactive COVID-19 Maps" - <i>Carnegie Mellon</i>
2020	"Visualizing Fairness in Machine Learning" - <i>Data Stories Podcast</i>

- 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.
[!\[\]\(2824aab9645d9fab95bae27ff6828dab_img.jpg\) 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.
[!\[\]\(0fbf3ad74a6c8dc44ba9ea17fc2aca5e_img.jpg\) GitHub](#)
- Spring 2018 **Georgia Tech Bus System Analysis**
System that combines Google Maps and graph algorithms to enable navigation for GT buses.
[!\[\]\(c42d0234b47eca423823087b9f2f5716_img.jpg\) Poster](#) [!\[\]\(0a4e27b70a7e12aa1778c291185d94b0_img.jpg\) Class](#)
- Spring 2014 **CTF Resources**
Guide and resources for capture the flag (CTF) competitions with over 1,000 stars on GitHub.
[!\[\]\(5fd3f9e293352907910bc12719d886a8_img.jpg\) Website](#) [!\[\]\(5624885e6ed09b96433c36df0b4bcc44_img.jpg\) GitHub](#)

Selected Classes

- 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

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 August 9, 2020.
