





Ángel Alex ander Cabrera

I am a first year PhD student in the [Human Computer Interaction Institute \(HCII\)](#) at [Carnegie Mellon University](#).

My research focus is broadly **human-centered AI**, specifically in applying techniques from **HCI** and **visualization** to help people better understand and develop machine learning models. 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 was a member of the [Polo Club of Data Science](#) and worked with [Polo Chau](#) and [Jamie Morgenstern](#). I also spent 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) <i>Carnegie Mellon University - Pittsburgh, PA</i>
August 2015 - May 2019	B.S. in Computer Science <i>Georgia Institute of Technology - Atlanta, GA</i> Concentration in intelligence and modeling/simulation. Minor in economics. Overall GPA: 3.97/4.0
Fall 2017	Sciences Po - Paris, France Exchange program with a focus on economics and political science.

Awards

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](#)

May 2019

Love Family Foundation Scholarship

Award for the undergraduate with the most outstanding scholastic record in the graduating class. Co-awarded the \$10,000 scholarship.



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 supervised learning system that predicts dangerous road areas.



Industry Experience

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

Designed and implemented an anomaly detection and trend analysis system for Google's primary 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

January 2018

- Present

Polo Club of Data Science

Undergraduate Researcher

Applying human computer interaction and visualization techniques to help people understand and design more equitable machine learning models.



September 2015
- May 2017

PROX-1 Satellite

Flight Software Lead and Researcher

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

[In space!](#)



[Press release](#)



Publications

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 Transactions on Visualization and Computer Graphics. Vancouver, Canada, 2019.



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 at ICLR (Debug ML). New Orleans, Louisiana, USA, 2019.



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.



Projects

Fall 2018 **ICLR'19 Reproducibility Challenge**

Generative Adversarial Models For Learning Private And Fair Representations

Implemented the architecture and reproduced results for an ICLR'19 submission using GANs to decorrelate sensitive data.



Spring 2018 **Georgia Tech Bus System Analysis**

System that combines Google Maps and graph algorithms to include Georgia Tech bus routes in navigation.



Spring 2014 **CTF Resources**

Introductory guide and resources for capture the flag (CTF) competitions with over 800 stars on GitHub.



Teaching

Fall 2016, Spring
2017, Spring 2018

Undergraduate Teaching Assistant

CS1332 - Data Structures and Algorithms

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

Fall 2016

Team Leader

GT 1000 - First-Year Seminar

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

Service

Student Volunteer

October 2019

IEEE Visualization Conference (VIS) 2019

January 2019

Fairness, Accountability, and Transparency (FAT*) 2019

Campus Involvement

September 2015
- April 2017

Stamps Scholars National Convention 2017

Vice-chair of large events

Directed a 13 person committee in organizing hotels, meals, and presentations for over 700 students.



Spring 2016

Tour Guide

Led a tour of campus for visiting families every week.



September 2015
- May 2016

Georgia Tech Student Foundation

Investments committee and Freshman Leadership Initiative

Conducted market research to help manage a \$1.2 million endowment and organized fundraising events.



Selected Classes

Fall 2018	CS 4803/7643 - Deep Learning
Spring 2018	CX 4242/CSE 6242 - Data and Visual Analytics
Fall 2017	BECO 1750A - Money and Banking
Spring 2017	CS 4641/7641 - Machine Learning
Spring 2017	CX 4230 - Computer Simulation
Spring 2017	CS 3511 - 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

Last updated September 3, 2019.