# Ángel Alexander 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)**
*Carnegie Mellon University - Pittsburgh, PA*

August 2015 - May 2019
**B.S. in Computer Science**
*Georgia Institute of Technology - Atlanta, GA*
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.

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.

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).

Website

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.

Press Release

## 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.

WSJ Article | 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.

Polo Club

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! | Website | Press release | C

## 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.*

PDF | Website

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.*

PDF | Workshop | Website

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.*

PDF Video Demo Code Website

## 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.

GitHub

Spring 2018

### Georgia Tech Bus System Analysis

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

Poster Class

Spring 2014

### CTF Resources

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

Website 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.

## 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.

Website

Spring 2016

### Tour Guide

Led a tour of campus for visiting families every week.

Website

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.

Website

## 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 August 6, 2019.