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 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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🐦 @a_a_cabrera

🐙 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.
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
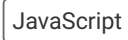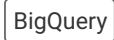
Research Experience

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

Publications

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

📄 PDF · Ⓜ Blog · ▶ Video · 🌐 Demo · ⓞ Code · 📊 Slides · 🌐 Website

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

📄 PDF · 🌐 Workshop · 🌐 Website

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.

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 900 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.

Service

Student Volunteer

October 2019 IEEE Visualization Conference (VIS)

January 2019 Fairness, Accountability, and Transparency (FAT*)

Reviewer

2019   IEEE Transactions on Visualization and Computer Graphics (TVCG)

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 November 1, 2019.