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 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

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

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

Co-awarded the $10,000 scholarship for the undergraduate with the most outstanding scholastic record.

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 ML system to predict 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

Created an anomaly detection and trend analysis system for Google's 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

August 2019 - Present

Carnegie Mellon Human Computer Interaction Institute (HCII)

Graduate Research Assistant

CMU Data Interaction Group

January 2018 - May 2019

Polo Club of Data Science

Undergraduate Research Assistant

Polo Club

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.

In space! | Website | Press release

Refereed 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 Conference on Visual Analytics Science and Technology (VAST). Vancouver, Canada, 2019.

PDF | Blog | Video | Demo | Code | Website

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.

PDF | 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 (Debug ML) at ICLR. 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

Teaching

CS1332 - Data Structures and Algorithms

Fall 2016
Spring 2017
Spring 2018

Undergraduate Teaching Assistant

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.

Service

Student Volunteer

October 2019 IEEE Visualization Conference (VIS)

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

Reviewer

2019 IEEE Transactions on Visualization and Computer Graphics (TVCG)

2019 ACM Transactions on Interactive Intelligent Systems (TiiS)

Press

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

Spring 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 April 23, 2020.