# KARY ANGELLY CABRERA

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## EDUCATION

**UNIVERSITY OF SOUTHERN CALIFORNIA (USC),** Los Angeles, CA Expected Graduation: May 2024
**B.S. | Electrical and Computer Engineering**
Specialization in Artificial Intelligence Applications
- Presidential Scholar, Viterbi Fellow, Ming Hsieh Institute Undergraduate Research Scholar

## ACADEMIC EXPERIENCE

**UNIVERSITY OF SOUTHERN CALIFORNIA**, Department of Electrical Engineering August 2023 – Present
**Undergraduate Researcher,** Directed Research
Advisor(s): Shrikanth Narayanan Ph.D.
- Performing independent research on monitoring Central American crop growth and disease detection, creating training datasets, and training object detection models. Interviewing agricultural laborers to refine non-invasive strategies to observe the influence of climate change on growing conditions.

**UNIVERSITY OF SOUTHERN CALIFORNIA**, Department of Electrical Engineering January 2022 – Present
**Undergraduate Research Assistant,** Single Analysis and Interpretation Laboratory
Advisor(s): Shrikanth Narayanan Ph.D.
- Created pre-processing scripts to transform raw biometric data into training datasets for supervised learning, enabling early detection of emotional distress in adolescents and inter-family conflict. Applied feature engineering to improve model performance, yielding a 25% improvement in accuracy

**UNIVERSITY OF SOUTHERN CALIFORNIA**, Department of Biological Sciences June 2018 – August 2018
**High School Research Intern**, Single Molecule Biophotonics Group
Advisor(s): Fabien Pinaud Ph.D.
- Applied nuclear extraction and imaging techniques to observe the relationship between Emerin and Actin protein levels in Emery-Dreifuss Muscular Dystrophy development, revealing no notable protein weight alteration post-RNAi introduction and minimal impact on Actin expression.

## PROFESSIONAL EXPERIENCE

**MICROSOFT & CYBORG MOBILE** May 2023 – August 2023
**Software Engineering Intern,** Foundation Reliability (M365 Substrate)
- Led the development of an automated data extraction, analysis, and storage pipeline, utilizing large language models, prompt engineering, natural language processing, and cloud analytics to identify trends across 300 post-mortem incidents, summarizing months of reports in under 10 minutes.

**BREAK THROUGH TECH @ UNIVERSITY OF CALIFORNIA, LOS ANGELES** June 2022 – April 2023
**Break Through Tech AI Fellow,** Verizon
- Created datasets and trained an object detection model to sort phones by brand and color, achieving 96% confidence and 98% precision. Collaborated on a color sorting algorithm using Euclidean distance, capable of predicting over 800 colors for improved inventory tracking and product recommendations.

**MICROSOFT & CYBORG MOBILE** June 2022 – August 2022
**New Technologist Intern**
- Engaged in a seven-week academy to learn the product management lifecycle. Applied these skills to develop a real-time climate data and emergency resources web application, helping communities

facing extreme weather events. Collaborated in a small team to pitch, and present a minimum viable product to Microsoft executives.

## PUBLICATIONS

- **"Implementing personalized machine learning models for sensing psychological states from mobile devices,"** In preparation for NIH. Timmons, A. C, Avramidis, K., Tutul, A. A., Duong, J., Carta, K., Walters, S., Simo Fiallo, N., Ahle, M. W., Feng, K., Feng, T., **Cabrera, A.**, Comer, J. S., Flemotomos, N., Narayanan, S., & Chaspari, T.

## PRESENTATIONS

- **MICROSOFT E+D INTERN DEMO SYMPOSIUM**, Microsoft Headquarters, Redmond, WA, July 2023. **Cabrera, A.,** Saldana G., Hassan N., Umoren E., "Incident Post-Mortem Analysis - Auto Resolution," Selected as one of the top 50 teams from a competitive organization-wide selection to present at the Microsoft E+D Intern Symposium.
- **BREAK THROUGH TECH LOS ANGELES**, University of California, Los Angeles (UCLA), Los Angeles, CA, December 2022. **Cabrera, A.,** Reyes S., "Team Verizon: Identifying Objects and Sorting by Color," Presentation awarded finalist title for the National Center for Women in Technology's Collegiate award
- **CENTER OF COMPUTATIONAL MEDIA INTELLIGENCE EXPLORECSR**, University of Southern California, Los Angeles, CA, May 2021. **Cabrera, A.**, Ojukwu, C., Lim, S., Deng, J., "Understanding the Role of Machine Learning for Music in Media"
- **LENNOX MATHEMATICS SCIENCE ENGINEERING ACADEMY**, Lennox Mathematics Science Engineering Academy, Lennox, CA, June 2020. **Cabrera, A.**, Cancinos, J., Salgado, N., Perez, D., "Self-Sustaining Light Post System Utilizing an Electromechanical Generator"
- **BRIDGE UNDERGRADUATE SCIENCE INSTITUTE SYMPOSIUM**, University of Southern California, Los Angeles, CA, August 2018. **Cabrera, A.**, Rodriguez, W., "The Impact of Emerin and Actin Protein Synthesis Disruption on Muscular Dystrophy Caused by RNA Interference"

## PROJECTS

**FLICK PICK - A COLLABORATIVE FILTERING-BASED CHROME EXTENSION** July 2023

- Collaborated with a team to develop a Chrome extension that utilizes collaborative filtering to create personalized film recommendations on popular streaming sites

**ELECTRIC GUITAR WITH NOTCH-FILTER FOR SIGNAL ATTENUATION** November 2022 - December 2022

- Designed and constructed an electric guitar featuring a custom notch filter, enabling precise signal amplification and targeted frequency rejection

**RASPBERRY PI-BASED K-MEANS FOR MUSIC GENRE CLASSIFICATION** November 2021

- Developed a Raspberry Pi-based k-means classification model utilizing volume sensor data to classify music genres and generate song recommendations, achieving a perfect score for project difficulty

## LEADERSHIP AND HONORS

- **Graduate School Mentorship Initiative, Cientifico Latino** (2023): Selected as one of 100 high-achieving students to participate in Cientifico Latino's Graduate School Mentorship Initiative (GSMI)
- **Ming Hsieh Institute Undergraduate Research Scholar, USC** (2023): Selected as one of 5 undergraduate researchers to receive exclusive funding, leadership, and mentorship opportunities
- **Collegiate Award Finalist, NCWIT Aspirations in Computing** (2023): Selected as one of 47 undergraduate and graduate women to receive recognition for developing high-impact projects

- **Computer Science Research Mentorship Program (CSRMP), Google** (2023): Selected as one of 135 students to participate in Google's semester-long research pathways and mentorship program

## SKILLS AND INTERESTS

- **Technical Skills:** Programming (C/C++, Python, Verilog, MATLAB), Front-end Development (HTML, JavaScript), Data Analysis (Kusto, Cosmos, Jupyter), Machine Learning (Computer Vision, NLP, LLM)
- **Professional Skills:** Project Management, Technical Writing, Collaboration
- **Interests:** Computer Vision, Computational Sustainability, Human-computer Interaction, Natural Language Processing