KARY ANGELLY CABRERA

310-256-7312 | karycabr@usc.edu | linkedin.com/in/karycabrera

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 (top 2% of undergraduates), Linn-Viterbi Scholar, Linn-Viterbi Fellow

RESEARCH EXPERIENCE

UNIVERSITY OF SOUTHERN CALIFORNIA, Department of Electrical Engineering August 2023 – Present
Undergraduate Researcher, Signal Analysis and Interpretation Laboratory (SAIL)
Advisor: Shrikanth Narayanan Ph.D.
- Conducted independent research to develop deep-learning models for early detection of leaf rust in coffee leaves, achieving 84% accuracy by utilizing signal processing and digitization techniques.
- Created a custom dataset to train neural networks, including simple, multi-layer perceptrons, and convolutional models, enhancing detection capabilities for crop disease identification.

UNIVERSITY OF SOUTHERN CALIFORNIA, Department of Electrical Engineering January 2022 – Present
Undergraduate Research Assistant, Signal Analysis and Interpretation Laboratory (SAIL)
Advisor: 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: 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.
- Presented the final product to the Vice President of Microsoft Substrate Fabric, demonstrating the operation of the pipeline, resulting in the team receiving additional funding to pursue similar projects.

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. Carta, K. E., Duong J. B., Walters, S. N., Benamu, D. I., Jumonville, G. A., Freitag, G. F., Tutul, A. A., Avramidis, K., **Cabrera, A.**, Narayanan, S., Chaspari, T., Comer, J. S., Ahle, M. W., & Timmons A.C.

PRESENTATIONS

- **MING HSIEH INSTITUTE FALL RESEARCH FESTIVAL,** University of Southern California October 2023
  Cabrera, A. "Computer Vision-Based Inventory Management and Product Recommendation System"
  Served on the organizing committee for the Ming Hsieh Institute's annual fall research festival.
- **MICROSOFT E+D INTERN DEMO SYMPOSIUM**, Microsoft Headquarters 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.
- **BREAK THROUGH TECH LOS ANGELES**, University of California, Los Angeles 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**, University of Southern California May 2021
  Cabrera, A., Ojukwu, C., Lim, S., Deng, J., "Understanding the Role of Machine Learning in Music"
- **BRIDGE UNDERGRADUATE SCIENCE INSTITUTE**, University of Southern California 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 the highest grade for project difficulty.

METAL MATRIX REINFORCED SHAPE-MEMORY ALLOY TIRES May 2021 – July 2021
- Collaborated on a proposal for self-repairing alloy tires, emphasizing material properties and stress analysis. The proposal was successfully accepted into NASA's New Technology Report database.

AWARDS AND HONORS

GOOGLE AI COMMUNITY AWARD, USC Center of Engineering Diversity October 2023
- Selected as one of 9 undergraduate students to organize community projects and events to expose community volunteers and underrepresented K-12 students to AI research.

GRADUATE SCHOOL MENTORSHIP INITIATIVE, Cientifico Latino August 2023
- Selected as one of 100 high-achieving students to participate in Cientifico Latino's Graduate School Mentorship Initiative (GSMI).

STANFORD SERGE, Stanford University October 2023
- Selected as one of 19 students to participate in Stanford's graduate diversity education and research mentorship program for undergraduates.

MING HSIEH INSTITUTE UNDERGRADUATE RESEARCH SCHOLAR, USC April 2023
- Selected as one of 5 undergraduate researchers to receive exclusive funding, leadership, and mentorship opportunities.

COLLEGIATE AWARD FINALIST, National Center for Women in Technology March 2023
- Selected as one of 47 undergraduate and graduate women to receive recognition for developing high-impact projects.

COMPUTER SCIENCE RESEARCH MENTORSHIP PROGRAM, Google January 2023
- Selected as one of 135 students to participate in Google's semester-long research pathways and mentorship program.

DEEPENN STEM, University of Pennsylvania October 2022
- Selected as one of 48 students to attend the University of Pennsylvania's first graduate diversity leadership program for undergraduates.

LATINX STUDENT LEADER, Google April 2022
- Selected as one of the 130 students to participate in Google's Latinx Student Leadership Summit for demonstrating a strong commitment to diversity and inclusion.

SKILLS AND INTERESTS

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