Bryan Ramirez-Gonzalez

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EDUCATION

The University of Southern California — **Los Angeles, CA**
Bachelors of Science in Computer Science, Merit Scholar — *Expected May 2028*
- Relevant Coursework: Fundamentals of Computer Science (C++), Engineering Freshman Academy
- Self Study: AWS AI & ML AI Programming with Python Nanodegree, CodePath Technical Interview Prep (Python), Data Structures (Java)

Citrus College — **Glendora, CA**
Dual Enrollment
- Relevant Coursework: Intro to Python, C++ Object Oriented Programing, Mechanical Drawing, Intro toWordPress, Introductory Statistics, Principles of Macroeconomics, Communication Skills in the Workplace

EXPERIENCE

HUMANS LAB, The University of Southern California Information Sciences Institute — **Los Angeles, CA**
Undergraduate Research Intern — *August 2024 - Present*
- Collected, preprocessed, and filtered a dataset of over 40,000 TikTok videos using TikTok's API that processes JSON data, enabling investigation into correlations between TikTok content and eating disorders. Applied Latent Dirichlet Allocation (LDA) for topic modeling, NLP preprocessing, and sentiment analysis with Python's NLTK and VADER libraries to analyze over 200,000 comments and descriptions
- Performed sentiment analysis on more than 100,000 video descriptions and comments using TextBlob and VADER, classifying emotional tone and combining results with Word2Vec embeddings, enhancing insights into eating disorder portrayal with an accuracy improvement of 15%
- Utilized Seaborn and Matplotlib for correlation analysis and data visualization of over 50 engagement metrics (likes, shares, comments), identifying key trends in hashtag usage (e.g., #EDAwareness) and revealing the top most impactful posts through hashtag analysis.

Melady Lab, The University of Southern California — **Los Angeles, CA**
Summer Undergraduate Research Intern — *July 2024 - August 2024*
- Enhanced OpenAI's CLIP Model by improving its ability to detect multimodal misinformation in over 80,000 text-image pairs, focusing on subtle inconsistencies between true text and manipulated images through advanced Multimodal Machine Learning techniques in PyTorch
- Developed a comprehensive, realistic dataset of synthetic misinformation by pairing related but incorrect images with true text, providing over 80,000 challenging examples to improve the model's training, making it more robust against deceptive content compared to random mismatches
- Demonstrated the model's ability to generalize to real-world misinformation scenarios involving sophisticated false image-text relationships, achieving significant improvements in detection capabilities

Jane Street Capital — **New York, NY**
Undergraduate Fellow — *July 2024*
- Improved query performance by implementing data querying systems using SQLite, optimizing rapid access to large datasets
- Selected as 1 of 37 students for a fully funded 5-day program at Jane Street's NYC office through Unboxed Fellowship
- Participated in trading activities and led a team in the Estimathon, solving quantitative challenges under competitive conditions

SkillsUSA — **Pasadena, CA**
Team Leader — *November 2023 - April 2024*
- Led a team of four to design and prototype a robotic wrist, resulting in a 225% improvement in pixel pickup efficiency through multiple design and testing iterations
- Streamlined the engineering process, reducing the robotic wrist's weight and adding a proximity sensor, which decreased mechanical strain and increased motor longevity by 30%, ensuring the prototype was competition-ready
- Achieved recognition as a REGIONAL Finalist and STATE Bronze Medalist, placing 3rd Best Engineering Project in California

FIRST Robotics — **Los Angeles, CA**
Lead Developer — *September 2023 - February 2024*
- Optimized robotic task accuracy and performance by deploying machine learning models through TensorFlow, training a vision-based system using convolutional neural networks (CNNs)
- Enhanced operational efficiency by engineering autonomous and teleoperated robotic control systems using Java, integrating a network of sensors for real-time data acquisition
- Reached Top 5 out of 32 teams as FIRST Tech Challenge CENTERSTAGE Robotics REGIONAL Semifinalist

Hackathons: Harvard's HackHarvard (Winner), AstroHacks (Winner), UC Berkeley's AI Hackathon, UPenn's PennApps, Yale's YHacks, Princeton's HackPrinceton
Other Competitions: Point72 Academy National Case, Jane Street's Estimathon, YHack's Estimathon

PROJECTS

eduTrade *(UPenn PennApps XXV Hackathon - devpost.com/software/market-sense)* — **Philadelphia, Pennsylvania**
Lead Developer — *September 2024*
- Improved stock screening, rebalancing, and back-testing efficiency by implementing AI-driven portfolio ranking and quadratic optimization algorithms, targeting the retirement planning needs of non-retirees.
- Led the development of the full-stack application using frameworks such as React + Vite, Tailwind CSS, and Flask.
- Enabled real-time analysis of S&P 500 stocks, helping users make better portfolio decisions by implementing data extraction and visualization with yFinance and Matplotlib
- Enhanced user experience by reducing data retrieval time through integrating Firebase as a real-time database for scalable data handling

SKILLS

Programming Languages: Python, Java, C/C++, Lua, SQLite, JavaScript, HTML, CSS
Frameworks and Tools: React, Flask, Next.js, TailwindCSS, Vite, Firebase, FastAPI, PyTorch, TensorFlow, GraphQL, APIs, Matplotlib, Terraform, OpenCV, Databricks, Arduino, Git, GitHub, VS Code