Tristan Lee

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Summary

Electrical Engineering student focused on neural engineering and human–device interaction. Skilled in Python, C++, MATLAB, and data analysis, I aim to integrate hardware and software into embedded, user-centered tools, delivering intuitive and impactful solutions.

Education

University of California, San Diego September 2025 - June 2027
B.Sc. in Electrical Engineering *La Jolla, California*

- **Relevant Coursework:** OOP in C++, Engineering Computation in C, Analog Design
- **Activities:** UCSD Ice Hockey, UCSD Surf Club, IEEE, Triton Neurotech, Triton Solar Car

Skills

Programming: Python, C/C++, Java, JavaScript, MATLAB, HTML/CSS, LaTeX
Data & Visualization: Pandas, NumPy, Matplotlib, statistical analysis, data cleaning
Tools & Cloud: Arduino IDE, Google Colab, Microsoft Power Apps, Onshape, KiCad, Excel

Experience

NASA - California Space Grant Consortium Microcomputer & Robotics May 2025 - August 2025
Engineering Intern *San Jose, California*

- Engineered embedded C++ firmware for an ESP32-based algae detection robot, integrating turbidity, pH, and temperature sensors to generate over 1,000 reliable data readings for environmental monitoring.
- Designed Python workflows to automate calibration, process sensor data in real time, and generate visualizations that improved testing efficiency and reliability.
- Created technical documentation for sensor calibration and firmware deployment process.

Technical Projects

Smart Motion Activated Security System (S.M.A.S.S.)

- Designed a motion detection and facial recognition system in Python using OpenCV and DeepFace, integrating with microcontroller hardware to trigger real-time outputs. Focused on reliable communication and user safety in security applications.
- Built data visualizations and statistical comparisons using Python and Pandas to assess precipitation trends, drought significance, and climate impacts for 13 cities over 60 years.

Movie Classification

- Analyzed movie script datasets using Python, Pandas, and NLP techniques to create stemmed word mappings, perform correlation analysis, and visualize language patterns.
- Implemented k-Nearest Neighbors classification using word frequency features to group and predict movie genres, supported by Euclidean distance similarity metrics.

Southwest U.S. Temperature & Precipitation

- Analyzed climate data for 13 Southwestern U.S. cities (1960–2021) using Python, creating visualizations to identify precipitation trends and drought patterns.
- Conducted A/B statistical testing to compare precipitation during EPA-defined drought years with other years, evaluating whether observed drought conditions were statistically significant.

World Progress

- Developed a Python data analysis pipeline to merge, clean, and analyze multi-year poverty and population datasets, calculating absolute poverty counts from percentage data for 150+ countries.
- Visualized poverty trends by generating time-series plots of the number of people living in extreme poverty for specific countries, enabling comparative analysis of global poverty reduction patterns.

Certifications

- **NASA Community College Aerospace Scholar**
- **Data Visualization in Google Sheets**
- **Understanding Data Visualization**