

RESEARCH

MATTER INTELLIGENCE, CA, USA

Oct 2025 - Present

Data Analysis Intern

- Developed Python-based analysis tools for cleaning, processing, and visualizing hyperspectral imaging data within a scalable company-wide pipeline.
- Designed and simulated an optical experiment to characterize mirror surface roughness, including simulating expected detector response.
- Performed data acquisition and analysis using a photon detector array, validating experimental feasibility under instrumentation constraints.

EUROPEAN COUNCIL FOR NUCLEAR RESEARCH (CERN), Meyrin, CH

Jun - Aug 2025

Student Researcher [Internship]

- Trained machine learning models to identify failure modes in silicon pixel detector chips across production stages.
- Improved sensitivity to severe class imbalance using data augmentation and model comparison.
- Calibrated silicon pixel detector using photon and electron radiation sources.

FACILITY FOR RARE ISOTOPE BEAMS, Michigan State University, MI, USA

Jun - Aug 2024

Student Researcher [Internship]

- Simulated control systems for particle accelerator cavity using MATLAB Simulink.
- Compared active disturbance rejection control to proportional integral control model performance.
- Automated accelerator cavity error diagnostics system.

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS, CA, USA

Jan - May 2024, 2025

Student Researcher

- Adapted 3D printer to be used as reference electrode apparatus to explore corrosion pervasiveness by measuring current density of corroded metals.
- Analyzed and visualized data using MATLAB.
- Prototyped vibrating electrode apparatus to remove system noise.

SPACE SCIENCES LABORATORY, University of California, Berkeley, CA, USA

Jun - Aug 2023

Student Researcher [REU]

- Performed end-to-end command and telemetry serial data simulations for NASA radio science mission development.
- Developed GUI interface, created instrument command scripts using coding language Python, and established automatic instrument data error detection system.
- Presented work at NSRM URSI 2024 radio science conference.

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS, CA, USA

Aug - Dec 2022

Student Researcher

- Investigated bacterial growth in both solid and liquid sugar substitute media.
- Analyzed cellular growth using spectrophotometry and qualitative methods.
- Verified growth against multiple control samples.

TECHNICAL SKILLS

PROGRAMMING LANGUAGES: Python, MATLAB, C++, ROOT.

SOFTWARE & TOOLS: Arduino IDE, MATLAB-Simulink, GitHub/GitLab, TortoiseSVN, GSEOS, Ubuntu (familiar), Arduino-MATLAB/Python integration.

HARDWARE & TECHNIQUES: Hyperspectral Imaging, CMOS Detectors, Arduino, Circuit Design, Microcontrollers, Serial Communication, Control Systems, Oscilloscope, Soldering, Function Generator.

ANALYTICAL SKILLS: Machine Learning (ML), Data Analysis, Automation, System Integration, Instrument Calibration.

EDUCATION

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS, CA, USA B.S. Applied Physics, Minor in Mathematics - GPA: 3.88/4.0 (cumulative) Relevant Coursework: Particle Physics, HEP Tools/Skills, Electronics, Computational Physics, Optics & Wave Mechanics, EM, QM, Statistical Mechanics/Thermal Physics, Classical/Analytical Mechanics, General Chemistry (I & II), Calculus I-III, Ordinary Differential Equations.	Jan 2022 - May 2025
KONKUK UNIVERSITY, Seoul, South Korea Study Abroad Program	Aug 2024 - Dec 2024
COLLEGE OF THE DESERT, Palm Desert, CA, USA No Degree Attained (Transferred)	Aug 2019 - Dec 2021

EXTRACURRICULARS

SELF-BALANCING INVERTED PENDULUM, Personal Project Work-in-progress - Constructed self-balancing inverted pendulum system on motorized cart from scratch. - Implemented Arduino PID control system utilizing accelerometer data. - Modeled system using first principles.	Oct 2025 - Present
NOTRE DAME PHYSICS OLYMPICS, University of Notre Dame Winning Team - Competed in three fundamental concept-based physics competitions. - Won first-place out of ~20 teams. - Set all-time record in foil boat competition.	Jun 2024
SOCIETY OF PHYSICS STUDENTS, California State University Channel Islands President/Treasurer - Lead meetings, events, and performed community outreach. - Organized, advertised, and formed logistics for laboratory/location field trips. - Awarded SPS Notable Chapter 2022-2023.	Jan 2023 - May 2024
LEARNING RESOURCE CENTER, California State University Channel Islands Embedded Peer Educator - Assisted professor in class instruction by helping form lesson plans, helping students in-class, and instructed my own lessons in physics, chemistry, and math. - Performed student outreach through announcements and reminders. - Tutored, held exam review sessions, and published class notes.	Jan 2023 - May 2024
PLOT-A-THON, California State University Channel Islands Competitor - Participated in 48-hour data visualization competition with given dataset. - Used the coding language Python for data analysis and visualization.	Feb 2023, 2024, 2025
FIELD DATA COLLECTION, California State University Channel Islands Student Researcher - Recorded species occurrence along transects in New Orleans, Louisiana, USA hardwood forest environment. - Documented environmental conditions through photography.	Mar 2022

PRESENTATIONS

2024 Mid-Michigan Symposium for Undergraduate Research East Lansing, MI Oral presentation	Aug 2024
2024 California State University Channel Islands Student Research Conference Camarillo, CA Oral and poster presentation	Jun 2024
2024 United States National Committee of URSI National Radio Science Meeting Boulder, CO Oral presentation	Jan 2024

CHARACTER REFERENCES

THOMAS CHRIEN, Matter Intelligence
Technical Director [Research mentor, Employer]
• tchrien@matter.com

JASON VEATCH, California State University Stanislaus
Physics Professor/Researcher [Mentor]
• jveatch@csustan.edu

SHEN ZHAO, Facility for Rare Isotope Beams, Michigan State University
Radio Frequency Group Leader [Research mentor]
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