Scott Phillips

Contact Information

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Scott Phillips
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Research Interests

High Energy Particle Physics, Electronics, Machine Learning, Data Analysis
Computational Physics.

Education

University of California Santa Cruz, Santa Cruz, California **September 2023 – June 2025**
B.S. Physics

Fresno City College, Fresno, California **August 2021 – May 2023**
A.S. Physical Science, A.S.-T Chemistry

Experience

SCIPP, University of California Santa Cruz **November 2023 – Present**
Pixel Detector Project Assistant, ATLAS Experiment at CERN

- Conducted thermal stress tests and power cycling on hybrid pixel sensors to assess reliability.
- Wrote automated test scripts for electrical performance evaluation using power supplies and DAQ tools.
- Developed a textual user interface to control testing hardware and monitor the temperature of chips.
- Performed failure analysis on faulty chips, documenting root causes and recommending fixes.
- Used oscilloscopes, multimeters, and precision power supplies for hardware-level testing.
- Complied with cleanroom and ESD-safe handling procedures in component assembly.

SCIPP, University of California Santa Cruz **October 2024 – June 2025**
Gradient Based Learning of Photon Selection Cuts: Cuts as Biases in Networks

- Developed a custom neural network and loss function to optimize photon identification in ATLAS data.
- Implemented gradient descent techniques to adjust cut criteria and improve signal efficiency.
- Processed large datasets using high-performance computing resources at the University of Chicago.
- Explored interpretability techniques to quantify biases introduced by selection criteria.

Metiri, Clovis, California **May 2022 – Jan 2024**
Technician/Analyst, Volatile Organic Analysis

- Operating GC-MS instrument for the detection of volatile and semivolatile organic compounds.
- Programming instruments to detect specific compounds by changing parameters for selective ion measuring (SIM).
- Observed chromatograms and mass spectra to determine the concentration of pollutants.
- Making quality control and calibrations at specific concentrations to be used at quality control within DoD and EPA control limits.
- Drafting and packaging reports, as well as interpreting data when needed.

Honours and Awards

UC Santa Cruz Deans Honor Award
Fresno City College Deans Honors Award
Clovis Community College Deans Honors Award

Technical Skills

Instrumentation: Oscilloscope, power supply, multimeter, soldering (SMD + through-hole), DAQ systems, GC-MS, microscope work, vibration/thermal test jigs

Software & Libraries: Python, C++, ROOT, TensorFlow, Keras, NumPy, SciPy, Matplotlib, Git

CAD & Hardware: AutoCAD, 3D printing (FDM), PCB testing, TikZ circuit schematics

Platforms: Linux, GitHub/GitLab, SLURM HPC clusters