

PHILIP SUH

213-434-1129 | psuh@stanford.edu | [linkedin.com/in/phlpsuh](https://www.linkedin.com/in/phlpsuh) | github.com/philipsuh004

EDUCATION

Stanford University

Sep 2023 - Jun 2027

B.S. in Computer Science

Stanford, CA

- **GPA:** 3.98 / 4.00
- **Concepts:** Data Structures & Algorithms, Systems Programming, Machine Learning Fundamentals, Probability Theory

EXPERIENCE

Software Engineer

May 2024 - Present

Stanford Shen Laboratory

Stanford, CA

- Designed and evaluated multiple models for automated scanning in microwave impedance microscopy, including particle filter, CNN-based, and multimodal LLM approaches by comparing accuracy on labeled scanning images.
- Improved directional accuracy by 40% and reducing manual scanning time by 1–4 days per sample using particle filter method which outperformed alternatives.
- Created a GUI that streamlined microscopy workflows and increased throughput for the lab.

Data Science Intern

Jun 2024 - Aug 2024

Kavli Institute for Particle Astrophysics and Cosmology

Stanford, CA

- Analyzed luminosity datasets (SDSS, Fermi-LAT, VLBI) using non-parametric statistical methods in Python (numpy, scipy, astropy, pandas) to help understand accretion disk-jet correlations and their cosmological evolution.
- Derived the radio-gamma luminosity function and applied non-parametric correlation tests (Kendall's τ , Pearson), showing higher gamma-radio local luminosity correlations ($PCC \approx 0.53$) in comparison to radio-optical ($PCC \approx 0.4$).

Machine Learning Intern

Dec 2023 - Jun 2024

SLAC Atlas Group

SLAC National Laboratory

- Tested semi-supervised methods for detecting beyond-the-standard-model tracking signatures by evaluating a proprietary permutation-invariant anomaly detection model in Python (scikit-learn), achieving similar $AUC = 0.98$ compared to the commonly used, supervised Particle Flow Network.
- Investigated oversampling artifacts in higher-energy physics pile-up simulation data that introduced bias into model training by applying data preprocessing libraries (Numpy, Pandas, SciPy).

PROJECTS

Overwatch Ro.Pa.Sci | XGBoost, TensorFlow, Next.js, TypeScript, PostgreSQL

Jun 2025 - Present

- Built a novel hierarchical esports analytics platform for Overwatch 2
- Processed time series game data for fight win rate prediction, first death classification, and character matchup spreads using an ML pipeline using XGBoost gradient boosting and TensorFlow neural networks.
- Optimized PostgreSQL database performance, enabling Python ETL pipelines to process 17,000+ data points per game, cutting down manual analysis time by 70%.

MIM HyperControl GUI | PyQt5, Sci-kit Image, OpenCV, PyVisa, Matplotlib

Jan 2025 - Oct 2025

- Built a modular PyQt5 GUI unifying hardware control into a single interface.
- Generated confidence-weighted scanner movement predictions using a particle-filter method, enabling automated navigation across microscopy samples.
- Developed high-performance visualization using `pyqtgraph` for live streaming data and `matplotlib` (`Qt5Agg`) for embedded scientific plots.

TECHNICAL SKILLS

Languages: Python, C++ , Java, C, TypeScript/JavaScript

Frameworks/Libraries: React, Next.js, PyTorch, TensorFlow/Keras, XGBoost, PyQt5, NumPy/SciPy/Pandas/Matplotlib

Technologies: Git, PostgreSQL, Supabase, Multimodal LLM/VLM APIs