

Wonu Park

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Profile

Stanford Physics and CS student with experience developing data pipelines, analytics tools, and machine learning systems for medical imaging research. Skilled in Python-based automation, data processing, and quantitative analysis. Interested in working with AI/ML, workflow automation, and data-driven decision making.

Education

Stanford University – B.S. Physics, Computer Science Expected Graduation: 2028

- **GPA:** 3.83/4.0 | **Relevant Coursework:** Machine Learning, Natural Language Processing, Probability, Linear Algebra, Signals and Systems, Programming Abstractions, Computer Organization and Systems.

Experience

Research Intern | *Molecular Imaging Program at Stanford (MIPS)* Mar 2025 - Present

- Engineered and optimized a Python pipeline to process and reconstruct 4D PET datasets, using vectorized operations to cut manual analysis time by 30 minutes per run.
- Implemented **statistical validation workflows** using bootstrap Monte Carlo resampling to quantify uncertainty in carbon flow metrics across **300+ regions of interest**, improving reliability of experimental analysis.
- Presented research findings through technical presentations and research posters at Stanford Bio-X and SURP, communicating complex results to interdisciplinary teams.

Projects

Graph Attention Network for Multi-Isotope PET Random Event Correction 2026
https://github.com/Krispei/PET_ML_RandomsCorrection

- Framed PET random coincidence correction as **binary edge classification** on detector hit graphs, replacing noisy statistical subtraction methods with per-coincidence deep learning inference.
- Designed a **3-stage GNN (linear encoder → 2-layer GATv2 → MLP classifier)** with edge features.
- Generated and processed 3.25M labeled graphs from GATE Monte Carlo simulations across single- and dual-isotope (^{18}F / ^{52}Mn) acquisition conditions; handled class imbalance via **positive upweighting**.
- Tuned classification threshold to 0.858 + 350 keV energy floor, achieving **92.9% precision, 92% recall, F0.5 = 0.927** on test set, demonstrating theoretical validation for further clinical evaluation.

Poker Strategy AI <https://github.com/Krispei/PokerAI> 2025

- Implemented a reinforcement learning agent using **Monte Carlo Counterfactual Regret Minimization (MCCFR)** to learn optimal strategies in imperfect-information environments.
- Built iterative simulation and evaluation pipelines to analyze convergence toward **Nash equilibrium** strategies.
- Managed full project lifecycle including **version control, documentation, and deployment of project website**.

BlackJack! <https://krispei.github.io/BlackJack/> 2025

- Implemented game engine logic, state management, and responsive front-end behavior for a dynamic 5-shoe BlackJack simulator with card-counting logic, probability calculations, and interactive UI (React).

Skills

- **Programming Languages:** Python, C, C++, JavaScript, Bash
- **Data & Analysis:** Data Processing Pipelines, Statistical Modeling, Monte Carlo Methods, Data Validation
- **Tools & Platforms** Git, Pytorch, NumPy, SciPy, Matplotlib, Unix, LaTeX
- **Additional** Technical Documentation, Research Communication