Harry Winston Sullivan
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Education

University of Utah — Salt Lake City, Utah
Bachelors of Science — Anticipated Graduation: **May 2023**
Computational Physics Major, Computer Science Minor — GPA: 3.86/4.00

Experience

Undergraduate Researcher: Hoepfner Group — **June, 2021 - Present**

- Created an information theory based algorithm to quantify the uncertainty of large scale neutron diffraction experiments of molecular and simple liquids and its effects as propagated into molecular dynamics simulation.
- Utilized the cluster computational network at the Center for High Performance Computing to create parallel machine learning algorithms for applications to liquid state theory.

Undergraduate Researcher: Zhao Group — **May, 2021 - August, 2021**

- Refactored LIGO gravitational wave signal analysis code and created a standard operating procedure for utilization of the program as well as how to effectively update the code with new analysis techniques.

Climbing Gym Instructor — **May, 2018 - May, 2020**

- Taught young climbers, ages 8-13, the fundamentals of climbing safely and effectively through planned lessons and activities.

Skills

- Scientific and technical communication skills via: presentations, papers, and SOPs
- Self-learner: Taught myself machine learning to qualify for multiple graduate machine learning courses without any prior academic experience
- Statistical analysis, optimization, probabilistic machine learning, and design of experiments
- Proficient in: Python, Numpy, Scipy, Matplotlib, PyTorch, Java, Matlab and LaTeX
- Classical and quantum molecular dynamics simulation in LAMMPS, HOOMD, and I-PI

Publications & Conference Presentations

1. B. Shanks, H.W. Sullivan, M. Hoepfner, *A Bayesian optimized structural force field for molecular fluids via modified Gaussian processes modeling* (In Internal Review)
2. B. Shanks, H. W. Sullivan,, M. Hoepfner, *Neutron Scattering Uncertainty Propagation to Molecular Simulations of Fluid Structure* (In Internal Review)
3. B, Shanks, M. Hoepfner, H. W. Sullivan, S. Smith, P. Smith, J. Potoff, *A Bayesian optimized structural force field for noble gasses enabled by a radial distribution function surrogate model*, Centre Européen de Calcul Atomique et Moléculaire: Recent Advances in Machine Learning Accelerated Molecular Dynamics