Jeremy Welsh-Kavan

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Education

MS Physics // Mar 2022
3.85 GPA
University of Oregon

BS Math & Physics // Jun 2020
3.83 GPA
University of Oregon

Languages, Software, and Technical Proficiencies

Python, Fortran, Bash, R, Arduino

NumPy, Matplotlib, Numba, Pandas, ggplot2

GROMACS, LAMMPS, Mathematica, RStudio, PyMol, Anaconda, Jupyter

High Performance Computing, Slurm Workload Manager

Shell scripting (Unix/Linux/macOS), Monte Carlo simulation

Machine Learning with Regression and Classification, PCA

Awards & Honors

Departmental Honors in Physics (Undergraduate)

Cum Laude, Latin Honors (Undergraduate)

Phi Beta Kappa Honors Society

Work Experience

Graduate Research Assistant, *The Guenza Lab, University of Oregon*

Sep 2020 – Mar 2022

- Performed and analyzed molecular dynamics simulations using the GROMACS molecular dynamics package on HPC Systems.
- Co-developed theoretical models for macromolecules using a coarse-grained Langevin equation.
- Created, modified, and updated custom Python libraries and Fortran code to expand functionality and improve legibility for analysis of ~1TB molecular dynamics simulation data of DNA.
- Performed simulations of polymer melts in LAMMPS on the Expanse HPC system.
- Developed Fortran code and Unix shell scripts for the analysis of ~10TB of LAMMPS atomistic and coarse-grained simulation data.
- Developed Fortran code to create input data for polymers of arbitrary length for the MCCCS Towhee Monte Carlo molecular simulation code.
- Trained and assisted undergraduates and a graduate research assistant on projects related to molecular coarse-graining schemes and simulation data analysis.

Library Student Assistant, *University of Oregon Libraries*

Sep 2017 – Present

- Tutored library patrons in elementary algebra, calculus, differential equations, linear algebra, partial differential equations, and physics.
- Trained library student employees on library systems software and the Library of Congress Classification system.
- Assisted library patrons with use of library services and systems.

Volunteer Teaching Assistant, *Eugene Math Circle, University of Oregon*

Sep 2021 – Present

- Assisted with teaching elementary school children problem solving for logic and math.