Spencer Wallace

520 461 4480 | spencerw530@gmail.com | GitHub | LinkedIn | San Diego, CA

Education

University of Washington — Seattle, Washington
PhD Astrophysics — *August 2023*

University of Arizona — Tucson, Arizona
BS Computer Science, Astronomy and Physics — *May 2014*

Experience

Postdoctoral Researcher

University of Washington, Astronomy Department — *September 2023 – Present*

- Performed profiling and performance tuning for the tree-based N-body code ChaNGa on an HPC cluster
- Optimized and streamlined the host to GPU memory transfer that takes place during each step, resulting in a 10% speedup over the existing benchmarks
- Collaborated with a specialist at the Texas Advanced Computing Center to streamline and prepare our codebase for deployment on their upcoming Grace Hopper GPU nodes

Research Assistant

University of Washington, Astronomy Department — *October 2019 – August 2023*

- Designed, proposed and executed a $450,000 National Science Foundation-funded research grant to simulate the formation of Earth-like planets using HPC resources (including SDSC Expanse)
- Contributed to three successful XSEDE computing proposals
- Implemented a new physics module in the N-body code ChaNGa to track collisions between solid bodies, allowing me to simulate resolutions 100x finer than any existing studies
- Developed a pipeline to create new simulation data from existing results using generative AI, saving over 900,000 CPU hours of computation
- Trained and mentored 5 undergraduate students while they deployed and analyzed simulations on the university's local HPC cluster
- Produced a coauthored IEEE publication while helping to develop paratreet, a toolkit for quickly testing and tuning parallel tree traversal algorithms (C++, Python, Bash, Git)

Teaching Assistant

University of Washington, Astronomy Department — *October 2015 – September 2019*

- Led weekly discussion sections, graded exams, and occasionally designed homework assignments and performed guest lectures for undergraduate astronomy classes, some of which involved teaching basic data analysis and numerical modeling skills using Python and Excel
- Collaborated with a team of other teaching assistants to ensure exams and assignments were graded consistently and fairly

Skills

Programming Languages: C++, Python, Bash

Tools and Environments: Git, NumPy, pandas, PyTorch, SLURM, matplotlib, seaborn

Communication: 3 first-authored publications, 2 co-authored publications, 8 conference talks, 3 conference posters, 20 pop-sci articles published through astrobites