Marvyn Bailly

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PhD Candidate in Applied Mathematics & Scientific Computation

Education

University of Maryland, College Park 2023 – Present
PhD, Applied Mathematics and Scientific Computation (GPA: 3.89)
University of Washington 2022 – 2023
M.S., Applied Mathematics (Concentration in Numerical Methods) (GPA: 3.84)
University of Oregon 2020 – 2022
B.S., Mathematics (Concentration in Applied and Computational) (GPA: 3.96)

Selected Coursework: Natural Language Processing, Computational Fluid Dynamics, Parallel Computing, Applied Numerical Optimization.

Research Experience

Graduate Research Assistant 2024 – Present
Computational Turbulence Laboratory, University of Maryland

- **Algorithm Design:** Designed an automatic quad/hex mesh generation framework in Julia. Addressed complex geometry handling.
- **Numerical Methods:** Implemented numerical methods for solving PDEs and optimization problems to drive the automatic generation of high-quality adaptive grids.
- **Multidisciplinary Collaboration:** Worked with experts in fluid dynamics to refine models and validate simulation results.

Research Assistant 2023 – 2024
Dept. of Atmospheric & Oceanic Science, University of Maryland

- **Simulation & Modeling:** Implemented Large Eddy Simulations (LES) to study internal ocean dynamics and diurnal cycles.
- **Data Visualization:** Synthesized large-scale simulation datasets into clear, informative visualizations to effectively communicate research findings.
- **Scientific High Performance Computing:** Developed modular Julia codebases to be run on the Zaratan cluster for fluid dynamics simulations, ensuring reproducibility and scalability.

Teaching & Leadership

Teaching Assistant 2022 – Present
University of Maryland & University of Washington

- Instructed graduate and undergraduate students in Data Science, Probability, and Calculus.

Summer Camp Director 2023 – 2025
Girls Talk Math, University of Maryland

- Directed summer program operations, managed hiring of undergraduate leaders, and coordinated industry outreach.

Graduate Student Committee Lead 2025 – Present
University of Maryland

- Lead organizer for the Joint AMSC, Math & Stat Student Seminar (JAMS).

Technical Skills

Languages: Julia, Python (numpy, pandas, transformers), C++ (parallel computing), MATLAB, Java, Bash.
Tools & Environments: Linux, Git, High Performance Computing (SLURM), LaTeX.
Domains: Numerical Methods, Numerical Optimization, Algorithm Design, Data Analysis.