Kevin A. Silberberg

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EDUCATION

University of California Santa Cruz
Master of Science in Scientific Computing and Applied Mathematics 2021 - 2025
GPA: 4.0
Dean's Honors: Spring 2023, Fall 2023, Winter 2024, Spring 2024

EXPERIENCE

University of California Santa Cruz, CA
Teaching Assistant, Mathematical Modeling I Jan 2025 - Mar 2025

- Explained complex mathematical and programming concepts in Python and Julia to 32 students through discussion sections and office hours.
- Received Teaching Assistant Excellence Award for guiding students through their individual writing and modeling projects and providing personalized feedback.

Atmos Lab, Graduate Student Researcher Jun 2024 - Sep 2024

- Mentored six undergraduate researchers while developing experimental methods for methane sample collection and mathematical tools for system identification, creating a meaningful impact on the lab's research capabilities.
- Collected vertical transect air samples downwind of dairy farms using quadcopter drones to inform a mathematical model of methane emissions.
- Investigated a sensor-free mathematical model for inferring wind velocity from rotorcraft drone flight data to improve the measurement accuracy and efficacy of methane sample collection.

CAMINO, Undergraduate Researcher Jun 2022 - Sep 2022

- Coordinated logistics in collaboration with team for 14 field sites in the Sierra Nevada Mountains, including meal planning and scientific equipment preparation.
- Conducted bird count surveys, collected and prepared biological samples (vegetation, feathers, blood, stool) for genomic and isotopic analyses.

MetalMark, Touchstone Climbing, Inc. Fresno, CA
Facility Maintenance Technician Sep 2017 - Mar 2020

- Maintained and repaired plumbing, electrical, HVAC, industrial washing machines, commercial vacuum cleaners, and on-site tools. Installed appliances, performed routine landscaping and groundskeeping, and serviced gutters.
- Built wooden deck and pergola, climbing walls with integrated staircases and storage spaces, specialized climbing hold washing station, custom shelving, cabinetry, and desks.

Fleet Readiness Center West Lemoore, CA
Journeyman Level Mechanic May 2016 - Sep 2017

- Served as work center supervisor, production manager, and quality assurance representative, directly supervising seven apprentice level mechanics.
- Led completion of 5,964 maintenance actions as quality assurance inspector, ensuring adherence to safety standards and preventing defects in production.
- Performed complex powerplant overhaul operations including engine module replacement, borescope inspections, and troubleshooting of mechanical and electrical components.
- Managed production asset priority configuration, preventative maintenance protocols, tool control, and foreign object damage prevention programs.

Strike Fighter Squadron VFA-122 Lemoore, CA
Apprentice Level Mechanic Sep 2013 - May 2016

- Maintained 114 aircraft in fast-paced, mission-oriented industrial environment as one of five maintainers under supervision.
- Performed comprehensive airframe and powerplant repair including functional checks, engine performance measurements, and troubleshooting.

- Executed engine removal and replacement procedures, conducted corrosion control inspections, and managed hazardous material disposal per OSHA directives.
- Utilized computer systems for maintenance publications access, supply requisitions, scheduling, and tracking operations.
- Contributed to training and development of new naval aviators and maintainers while producing mission-ready aircraft.

PROJECTS

Invasive Trout — Investigated competitive interactions between introduced trout and alpine birds for arthropod resources across 27 Sierra Nevada sites. Analyzed five years of trout density and bird abundance data using ArcGIS Pro and R, and presented ecological findings at department seminar.

Parallel Game of Life — Developed high-performance parallel implementation using MPI and Fortran with 2D domain decomposition achieving linear scaling. Implemented ghost cell communication across 8 neighboring processes, MPI file I/O for distributed data writing, and performance analysis on startup cost and per cell computation time on UCSC's Lux cluster. Created complete pipeline with Python/Pygame visualization and NetCDF data handling.

TCRpredict — Compared supervised learning models for predicting T-cell receptor binding to cancer-associated peptide-MHC complexes using structural bioinformatics. Processed 1,026+ protein structures from TCR3d database, extracted binding features using PRODIGY, and achieved 80% prediction accuracy with Support Vector Machine model.

ClusterK — Alignment-free computational method for categorizing contiguous genomic sequences from environmental DNA samples.

MILITARY SERVICE

United States Navy
Aviation Machinist's Mate, Petty Officer Second Class Sep 2013 - Sep 2017
Discharge Status: Honorable

PROFESSIONAL TRAINING & CERTIFICATIONS

Confined Spaces Course, Hazmat Storage and Handling, Tool Control and Maintenance Practices, First Aid, CPR Certification, Battery Safety, Asbestos/Man Made Vitreous Fibers, Bystander Intervention, Sexual Harassment Awareness, Privacy and PII Awareness, Personal Financial Management, Equal Opportunity Training

COMPETENCIES & SKILLS

Programming Languages	Julia, Python, Bash, R, FORTRAN, C, C++
Development Tools	Git, Linux, Emacs, Makefile, Docker
High Performance Computing	MPI, OpenMP, SLURM, HDF5, NetCDF
Documentation & Publishing	Quarto, LaTeX, Markdown, Overleaf, GitHub Pages, Jupyter Notebooks
Data Visualization	Makie.jl, GNUplot, matplotlib, Plotly
Numerical & ML Libraries	NumPy, SciPy, PyTorch, scikit-learn, scikit-image, pandas, LAPACK, BLAS, (equivalent Julia libraries)
Productivity Tools	Microsoft Office Suite, Google Workspace
Professional Attributes	Excellent written and verbal communication, collaborative team player, with strong interpersonal skills, independent problem-solver who takes initiative, systematic record keeping

HOBBIES & INTERESTS

Passionate about outdoor pursuits that challenge focus and endurance, including rock climbing, hiking, and sailing. Enjoy capturing landscapes and memorable moments through photography. Advocate for environmental stewardship and sustainable living practices. Pursue self-directed learning about the history and cultures of ancient civilizations. Engage in scientific discussions and concept development with peers and colleagues.