Shervin Sahba

Machine Learning, Physics, & Software.

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Physics PhD, photonics and machine learning researcher, software dev, experieced teacher and admin, open-source contributor.

skills

programming	**Bash Shell**, C, Julia, LaTeX, Mathematica, MATLAB, **Python**, SQL
deep learning	**PyTorch**
applied math	computational and analytic analysis of **differential equations**, machine learning
physics	**photonics**, fluids, condensed matter, quantum computing
computational	expert **Linux** administration, **high performance computing**, hardware support, **git**
business	communications, finance, **public-speaking**, logistics, administration
misc.	web development, game design, graphic design

education

2023 **PhD Physics** @ University of Washington
Thesis: Machine Learning for Aero-Optical Wavefront Characterization and Forecasting
2021 **MS Applied Mathematics** @ University of Washington
2019 MS Physics @ University of Washington
2018 MS Physics @ San Francisco State University
2013 Certification in Information System Administration @ UC Berkeley Extension
2009 BS Logistical Management @ University of Rhode Island
2009 BA Psychology @ University of Rhode Island

work

2018-2023 *Research Associate in the Kutz Dynamics Lab* @ UW Dept. of Applied Mathematics
2017-2021 *Teaching Assistant* @ UW Dept. of Physics
2015-2017 *Research Assistant in Man Research Group* @ SFSU Dept. of Physics & Astronomy
2014-2017 *Mathematics & Physics Instructor* @ Elite Educational Institute
2013-2015 *Owner & Private Tutor* @ Edge U Tutoring
2011-2014 *SAT & ACT Instructor* @ Revolution Prep

publications

S Sahba, CC Wilcox, A McDaniels, SL Brunton, & JN Kutz. Proc. SPIE Interferometry XXI (2022)
Wavefront sensor fusion via shallow decoder neural networks for aero-optical predictive control
S Sahba, D Sashidhar, CC Wilcox, A McDaniels, SL Brunton, & JN Kutz. Optical Engineering (2021)
Dynamic mode decomposition for aero-optic wavefront characterization
S Sellers, W Man, S Sahba, & M Florescu. Nature Communications (2018)
Local self-uniformity in photonic networks. doi:10.1038/ncomms14439

talks

2023 SPIE FiO+LS, Tacoma, Poster, *Shallow Recurrent Decoder for Aero-Optical Wavefront Sensing*
2022 SPIE Optical Engineering, San Diego, *Wavefront sensor fusion via shallow decoder neural networks for aero-optical predictive control*
2020 Air Force Research Lab, Online, *Dynamic Mode Decomposition for Aero-Optical Wavefront Reconstruction*.
2020 Town Hall Seattle by Engage Science, Online, *Taming Lasers in the Wild Sky*.
2016 ARCS NCC Symposium, Stanford, Poster, *Hyperuniform Disordered Photonic Structures*.
2015 ARCS NCC SFSU Review, San Francisco, *Photonic Crystals and Modern Applications*.

honors

2020 AFRL Outstanding Scholar Award Recipient.
2020 Air Force Research Lab (AFRL Directed Energy) Scholar.
2019 UW Graduate Teaching Award.
2017 UW Physics Department Fellowship.
2017 SFSU Distinguished Achievement Award.
2016 ARCS Northern California Scholar.
2016 Blue Waters Petascale Institute, selected participant.
2016 SFSU College of Science & Engineering Student Project Showcase Winner, 1st place.
2015 ARCS Northern California Scholar.
2009 Magna Cum Laude, University of Rhode Island.
2005 American Invitational Mathematics Examination, contestant.

community building

Software Carpentry 2019-2022, *Carpentries Instructor*

Led tutorials in Linux, Python, R, and Git in live-coding workshops, bringing data tools to professional researchers.

UW Physics Slam 2019-2020, *Host and organizer*

Organized UW's first physics slam, bringing cutting-edge research to the public and fundraising for diversity in physics.

DRiP (Directed Reading in Physics) 2018-2019, *Program organizer, Research mentor*

Constructed a program to coach UW physics undergrads in research, fostering community and developing scientific literacy.

Career Development Organization for Physicists at UW 2018-2020, *President, Conference organizer*

Led an industry-meets-academia career conference, handling event logistics, marketing, fundraising, and programming.

Physics Graduate Student Committee 2017-2020, *Event committee member*

Hosted departmental socials for the UW Physics Department.

UW Physics Peer Mentor Program 2018-2019, *Peer mentor*

Introduced new PhD's to UW, providing guidance.

OSA, The Optical Society 2016-2017, *SFSU Student Chapter President*

Arranged the traveling lecturer series of talks, inviting faculty from abroad to visit SFSU.

teaching experience

Dept. Physics, University of Washington

2017-2021, *Graduate Teaching Assistant*

PHYS115 General Physics Mechanics
PHYS116 General Physics Electromagnetism
PHYS117 General Physics Mechanics Lab
PHYS118 General Physics Electromagnetism Lab
PHYS121 Physics w/ Calc. Mechanics Tutorial
PHYS122 Physics w/ Calc. Electromagnetism Tutorial
PHYS123 Physics w/ Calc. Waves & Optics Tutorial
PHYS121z Physics w/ Calc. Mechanics Lab
PHYS224 Thermodynamics
PHYS324 Quantum Mechanics
PHYS325 Quantum Mechanics
PHYS423 Solid State Physics
PHYS427 Quantum Computing & Information
PHYS576 Modern Data Analysis Techniques

Dept. Physics & Astronomy, San Francisco State University

2015-2016, *Graduate Teaching Assistant*

PHYS360 Electricity and Magnetism
PHYS457 Principles of Electronics

Elite Educational Institute

2014-2017, *Mathematics & Physics Instructor*

tutoring: SAT, SAT II, Precalculus, AP Calculus, AP Physics.
courses: Geometry, Precalculus (2 sections), SAT Prep (10 sections)

Edge U Tutoring (link to archived site)

2013-2015, *Owner & Private Tutor*

SAT, ACT, AP Calculus, AP Physics, AP Biology

Revolution Prep

2010-2013, *SAT Instructor & Private Tutor*

SAT Prep (19 sections), AP Phys B Review Course, Online SAT Prep (3 sections)