DaveWilliams

Data science postdoc

contact

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github
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programming/ technical

♥ Python

AWS
MapReduce
Git
GitHub
MATLAB
OpenCV
Mathematica
R
HTML/CSS
LaTeX
Solidworks
KiCad
Eagle

education

Ph.D. in Biophysics
Univ. of Washington
A New View of the Radial Geometry in Muscle
2012

B.A. in Physics
Reed College
Optical Tweezers: Accuracy and Automation
2006

profile

I'm a data scientist with domain expertise in applying cluster computing and statistical analyses to biophysical problems. I use standard and custom Python libraries, such as SciPy and emcee, to process and understand noisy data generated by stochastic real-world processes. I design these solutions, backed by AWS, to scale.

experience

2014-Now **eScience Institute, University of Washington** Seattle, WA
Data Science Postdoctoral Fellow
- Created Bayesian machine vision package for analyzing X-ray diffraction images: github.com/cdw/muscle_saxs
- Took organizational leadership role, e.g. managing speaker invitation and sitting on steering committee
- Managed and mentored graduate and undergraduate students on projects using diverse techniques including model reduction, evolutionary programming, and hardware design
- Mentors: Magdalena Balazinska and Tom Daniel

2012–2014 **Concord Field Station, Harvard University** Boston, MA
NSF Mathematical Biology Postdoctoral Fellow
- Designed and built small animal-mounted tracking electronics
- Developed statistical characterisations of spatial networks
- Publicized work through NPR, BBC News, National Geographic, etc.

2008 **Microsoft Research** Redmond, WA
Intern
Created documentation and benefit evaluations for scientific cloud computing.

2006–2012 **Department of Physiology and Biophysics, University of Washington** Seattle, WA
Graduate Research Assistant
- Created one of the first AWS clusters at UW, AWS evangelist to scientific community
- Developed spatial graph models of muscle proteins and their interactions
- Wrote intro seminars on Python and microcontrollers for biologists

2002–2006 **Reed Research Reactor, Reed College** Portland, OR
NRC Licensed Reactor Operator
- Operated a non-power generating nuclear reactor
- Determined composition of archaeological and chemical samples
- Developed and prototyped new material handling apparatus

awards & grants

2014–2018 **Multi-University Grant (Co-PI)** Biology Department, Univ. of Washington
Army Research Office grant, "Muscle's energetic versatility arises from its crystalline and multi-component structure"

2014–2017 **Data Science Postdoctoral Fellowship** eScience Institute, Univ. of Washington
Moore/Sloan Data Science & WRF Innovation in Data Science Postdoctoral Fellowship

2012–2014 **NSF Postdoctoral Fellowship** Concord Field Station, Harvard University
Fellowship in Mathematical Biology

2010, 2015 **Amazon Web Services Grants For Research** University of Washington

2007–2010 **NIH Cardiovascular Training Grant Fellowship** Bioengineering Dept., Univ. of Washington

mentorship & teaching

2014–Now **Software Carpentry instructor** eScience Institute
Leading multi-day seminars introducing scientists to software development with Git, shell scripting, and Python

2009–Now **Graduate and undergraduate mentoring** Univ. of Washington, Harvard University
Project management and mentoring of students from diverse backgrounds, tailoring motivation and advising to individual needs

2008–2012 **Biology outreach** Biology Dept., Univ. of Washington
Lead K-12 students through botanical adaptations as a Greenhouse docent, interactive demonstrations at Pacific Science Center during PAWS on Science

2007–Now **Academic teaching** Univ. of Washington, Harvard University
Instructor for biomechanics and anatomy, TA for physiology classes at undergraduate and graduate levels

publications & presentations

- Five first author publications, including publication at VLDB 2015 workshop
- Published in high impact journals such as Science and PNAS
- More than 20 invited seminars and presentations at national meetings

interests

professional:
statistical analysis of large datasets
effective and novel visualization
stochastic simulation
mentoring, pedagogy
design and development of group culture

personal:
bicycle camping
cross-country skiing
pottery