UNIVERSITY of WASHINGTON

UW Data Science for Social Good

Information session for prospective student applicants

Anissa Tanweer, Program Director
Emily Keller, Program Manager

UNIVERSITY of WASHINGTON
eScience Institute
ADVANCING DATA-INTENSIVE DISCOVERY IN ALL FIELDS

Agenda

- Brief introduction to the eScience Institute
- Data Science for Social Good (UW DSSG)
  - Program overview
  - Application process
  - Previous projects
- Questions?

Introduction to eScience

eScience Mission

The eScience Institute empowers researchers and students in all fields to answer fundamental questions through the use of large, complex, and/or noisy data.

As the hub of data-intensive discovery on campus, we lead a community of innovators in the techniques, technologies, and best practices of data science and the fields that depend on them.

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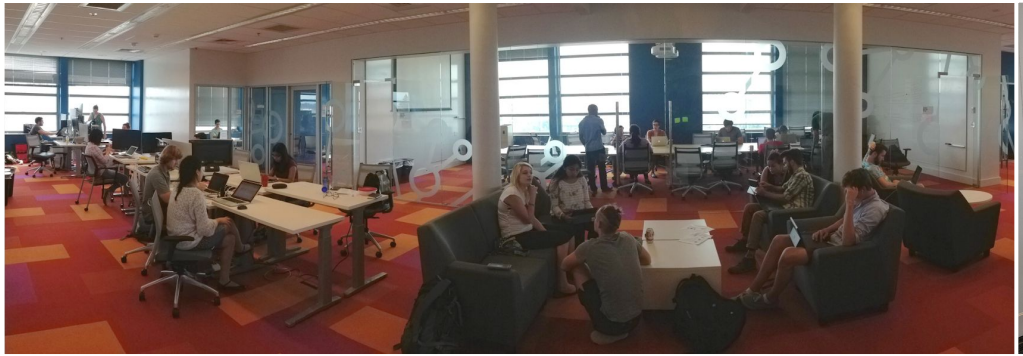


eScience Research Team

Director of Research

David Beck
Ph.D. Medicinal Chemistry,
Biomolecular Struct. & Design

Data Scientists

Anthony Arendt
Ph.D. Geophysics

Bernease Herman
B.S. Statistics
Formerly SE at Amazon

Valentina Staneva
Ph.D. Applied Mathematics and Statistics

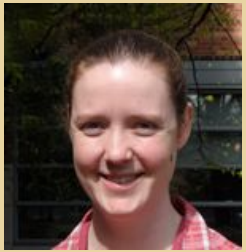
Anissa Tanweer
Ph.D. Communication

Noah Benson
Ph.D. Biomedical & Health Informatics

Joe Hellerstein
Ph.D. Computer Science
IBM Research, Microsoft Research, Google (ret.)

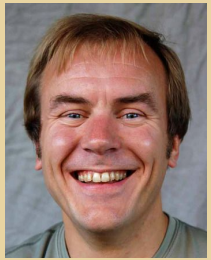
Research Scientists

Nicoleta Cristea
Ph.D. Environmental Engineering



Bryna Hazelton
Ph.D. Astrophysics
Physics

Scott Henderson
Ph.D. Geological Sciences



Vaughn Iverson
Ph.D. Oceanography

Spencer Wood
Ph.D. Zoology

Technical Education Specialist

Naomi Alterman
M.S. Electrical Engineering

We Disseminate Data Science Expertise & Best Practices

- Open Office Hours
- UW Data Science Seminar & Community Seminar
- Tutorials, bootcamps, workshops, and hack weeks
  - Astrohack, neurohack, geohack
  - Software carpentry (> 400 participants since we started counting in 2015)
- Winter Incubator
- Summer DSSG

Program Overview

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eScience Institute

DATA SCIENCE FOR SOCIAL GOOD

Modeled after similar programs with elements from our own Data Science Incubator.

Program Goals

- Figure out what it means to do “good” with data science
- Train students in data science methods
- Increase data science capacity across fields and organizations
- Positively impact society

Mode of Participation

- Students are required to work **in-person** (with some flexibility)
- Project leads and data scientists may work in-person, remote or hybrid
- Program staff will be hybrid
- We will take on two projects this year

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Team Composition

DSSG Student Fellows (4)
eScience Data Scientist Leads (1-2)
Project Leads (1-2)

Examples of Project Lead Affiliations

- University of Washington (academia)
  - Disaster Data Science Lab
  - School of Social Work
  - Department of Astronomy
- Seattle Department of Transportation (gov)
- Bill & Melinda Gates Foundation (philanthropy)
- Conservation International (nonprofit)

What we expect from Project Leads

- Available to team 16 hours/wk on average
- Participation in program-wide sessions & meetings
- Domain expertise
- Stakeholder engagement
- Ability to discuss and promote work
- Open & reproducible when possible (Github)
- Description of project on our website
- Acknowledgement in publications

What we expect from students

- 40 hours/wk ($9,000 stipend)
- Adherence to attendance policies
- Current student: grad or senior entering grad school
- Baseline programming and statistics knowledge
- International students must be eligible to work in US (can’t support visas)
- Strong personal statement
- Team player

UW DSSG Opportunity Scholarship

- Optional application process
- Supplemental award
- For students facing financial barriers
- https://escience.washington.edu/using-data-science/data-science-for-social-good/student-fellows/opportunity-scholarship/

What you can expect from us

- Data science mentors highly experienced in cross-disciplinary collaboration
- Expertise in (non-exhaustive):

Machine learning	Statistical inference
Databases	GIS
Modeling	Optimization
Visualization	Cloud computing

- Best practices in version control, reproducibility, ethics, and human-centered design
- Support and structure for intensive team work
- Data science curriculum

Tutorials

- Intro to Git & GitHub*
- Git and Git Workflow*
- Team Management Processes
- Pandas, Geopandas, and SQL
- Python Coding Standards and Documentation
- Unit Tests
- Project Organization, Virtualization, Continuous Integration
- Pair Programming
- Object Oriented Python
- Software Design
- Machine Learning
- Web Design and Web Apps
- Cython/Dask/High Performance Python
- Vega/Altair
- Data Visualization with Tableau
- An Introduction to Visual Communication

Workshops

- Introduction to Data Science for Social Good
- Team Development
- Preparing for Stakeholder Engagement
- Stakeholder Analysis & Speculative Ethics
- Best Practices in Public Speaking
- Final Presentation Practice Talks

Other Activities

- Project Spotlights
- Docathons
- Career Conversations
- Stakeholder Engagement
- Social Events

"What surprised me about the program, I was not expecting for it to be as much fun as it was."

- Jennie Romich, Project Lead (2021 & 2022)

Fellow Selection Process

Call for Applications is NOW OPEN!

General Info:
https://escience.washington.edu/using-data-science/data-science-for-social-good/student-fellows/

FAQ's:
https://escience.washington.edu/using-data-science/data-science-for-social-good/student-fellows/student-fellow-faqs/

We encourage you to reach out with questions!

Emily Keller: efkeller@uw.edu

What we're looking for in DSSG fellows

In individuals:

- Baseline programming and research methods training
- Motivation for wanting to participate
- Strong teamwork
- Experience with research and "social good"
- Commitment to diversity

Across the cohort:

- Range of disciplinary backgrounds and expertise
- Range of technical abilities
- Range of educational experience levels

Selection Process

- Initial screening of applications
- Committee review of threshold candidates
- Interviews with top candidates (~20%) - Late March
- Solicitation of info from short-listed candidates - Early April
- Notification of admission offer (>10%) or waitlist - Mid April

Important Dates

Jan. 9 - Student applications opened
Jan. 17 - Student Info Session
Feb. 13 - Student Fellow Applications due
Mid March - Notification of interview invitation
Late March - Interviews held
Early April - Notification of shortlisting
Mid April - Notification of admission offer or waitlist status
June 12th - First day of program
August 18th - Last day of program

UW DSSG Projects

A non-exhaustive list of topical interests

- Affordability and livability
- City planning
- Environmental issues
- Equity and justice
- Hazards and resilience
- Health and wellness
- Housing
- Public education
- Sociodemographic disparities
- Transportation

Technical areas of eScience expertise

- New platforms, new algorithms, new methods, new datasets
- Working with large, heterogeneous, and noisy datasets
- Scalable analytics and predictive models
- Interactive visualization
- Code review, publishing, and reproducibility
- Online teaching materials, tutorials

Summer 2022 Projects

Cost of living with the Self-Sufficiency Standard

Project Leads: Annie Kuclick and Lisa Manzer, UW Center for Women's Welfare

Tracking family & intergenerational poverty

Project Lead: Jennie Romich, UW School of Social Work; West Coast Poverty Center

Satellite Streaks in Astronomical Images

Project Leads: Meredith Rawls and Dino Bektešević and, UW Dept. of Astronomy

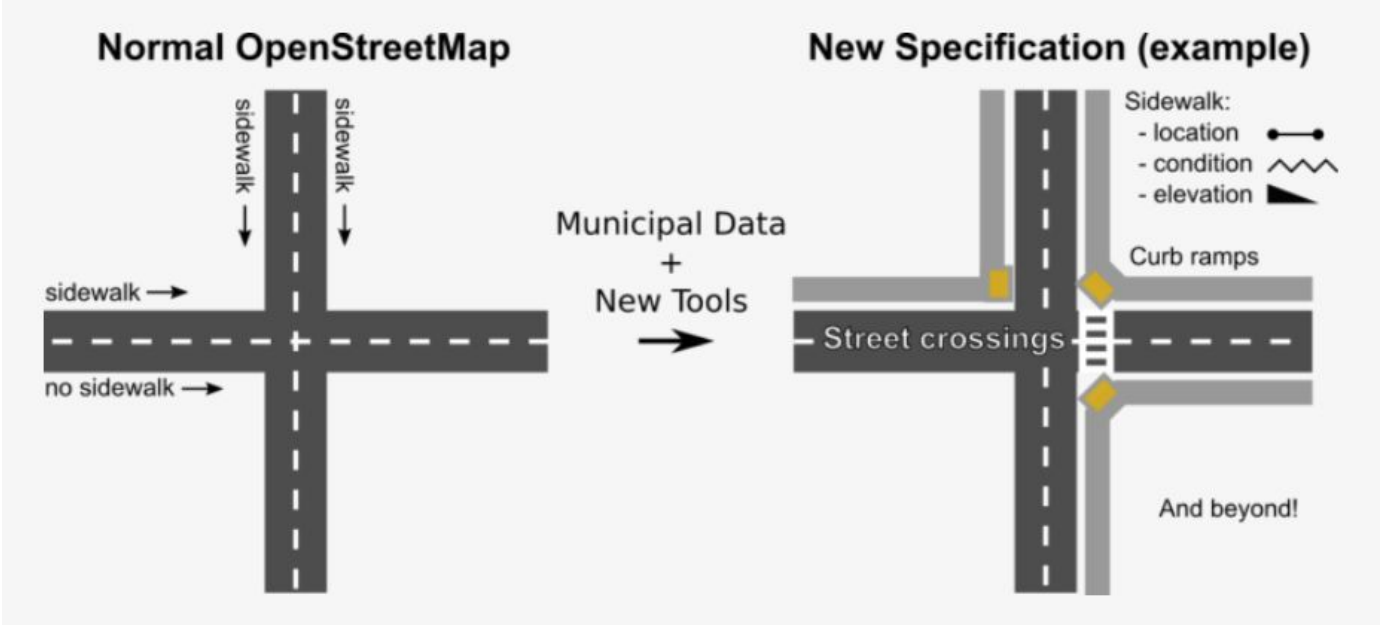
Heating Loads in Alaska and Beyond

Project Lead: Erin Trochim, Alaska Center for Energy and Power, Univ. of Alaska, Fairbanks

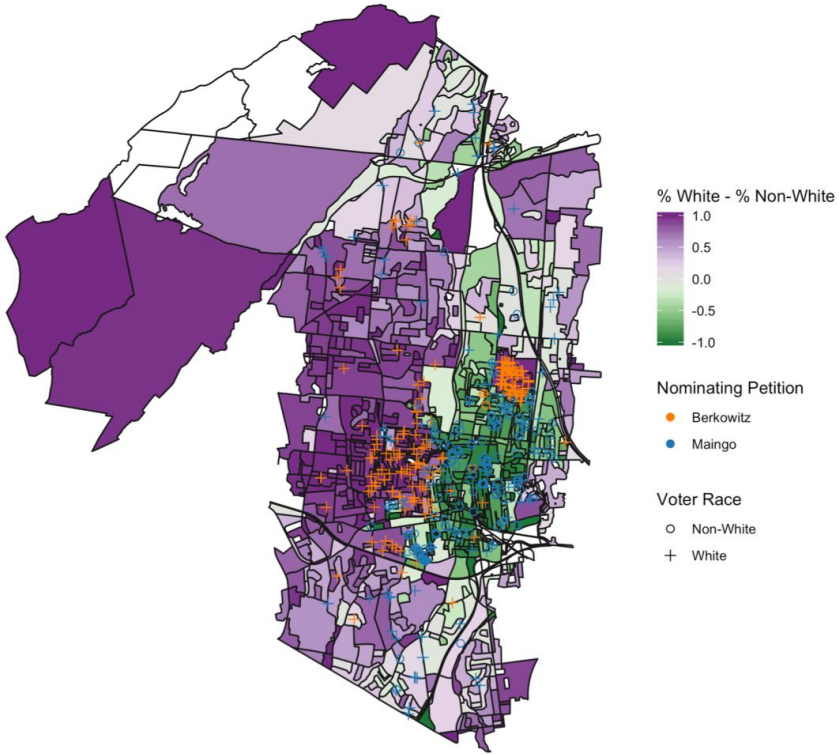
We have a broad view of what counts as data science

Mining Online Data for Early Identification of Unsafe Food Products

Global Open Sidewalks: Creating a shared open data layer and an OpenStreetMap data standard for sidewalks



Detection of Vote Dilution: New tools and methods for protecting voting rights



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Questions?

Application process, eligibility, etc:
Emily Keller (efkeller@uw.edu), Program Manager

Program content, etc:
Anissa Tanweer (tanweer@uw.com), Program Director

https://escience.washington.edu/using-data-science/data-science-for-social-good/

Questions?

Anissa Tanweer, Program Director: tanweer@uw.edu

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Anissa Tanweer, Program Director: tanweer@uw.edu