

# David Merrell

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## My Goals

I seek a **machine learning** research position in the **biotech** sector, starting Fall 2022.  
I want to harness my PhD expertise in **Bayesian ML** to extract useful insights from **omics data**.  
I want to use my competence in **probability**, **statistics**, and **algorithms** to solve industry problems.

## Education

### PhD Computer Sciences (IN PROGRESS)

Jan 2019 - Present

University of Wisconsin – Madison

**Research.** Probabilistic models for omics data and signaling pathways.

Advised by Anthony Gitter.

### MS Computer Sciences

Sep 2016 - Dec 2018

University of Wisconsin – Madison

**Research.** Exact probabilistic inference. Advised by Aws Albarghouthi and Loris D'Antoni.

### BS Mathematics, cum laude

Apr 2014

Brigham Young University—Minor in Physics

3.90 GPA

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## Publications

David Merrell, Thevaa Chandereng, Yeonhee Park. *A Markov Decision Process for Response-Adaptive Randomization in Clinical Trials*. 2021 (UNDER REVIEW)

David Merrell, Anthony Gitter. *Inferring Signaling Pathways with Probabilistic Programming*. ECCB 2020.

David Merrell, Aws Albarghouthi, Loris D'Antoni. *Weighted Model Integration with Orthogonal Transformations*. IJCAI 2017.

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## Employment

### DataChat, Inc.

Summer 2019

Internship. Developed auto-ML infrastructure.

**RAND Corporation**

Sep 2014 - Mar 2016

Operations research, simulations, and data analysis for DoD projects.

**Sandia National Laboratories**

Summer 2013; Summer 2014

Internship. ALEGRA shock and multiphysics simulation code.

**Pacific Northwest National Laboratory**

Summer 2012

Internship. Simulations and data analysis for the NIFFTE nuclear fission experiment.

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## Skills

**Technical**

- **Programming Languages.** Python, Julia, C++, MATLAB, R, Java
- **Libraries and Packages.** numpy, scipy, pandas, matplotlib, sklearn, pytorch, pyro, Gen.jl, BioConductor, Rcpp.
- **Miscellaneous.** git, Snakemake, Linux, L<sup>A</sup>T<sub>E</sub>X, Singularity, bash, Jupyter, SolidWorks.

**Soft**

Writing, public speaking, event planning, polite disagreement, teaching.

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## Awards and Funding

**Predoctoral Training Program in Bio-Data Science**

Sep 2019 - Sep 2021

Two years of NIH funding and training via the Biostat. &amp; Medical Informatics Department.

**Computer Sciences Summer Research Assistantship**

Summer 2017

Summer funding from the CS Department after my first year of graduate school.

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## Service & Leadership

**UW-Madison Student ACM chapter (SACM)**

Sep 2016 - present

Held various leadership roles within the local student ACM chapter: Activities Committee chair, Treasurer, Food Committee chair, Social chair.

**President — SACM**

Aug 2018 - Aug 2019

Restructured the organization. Improved the division of labor. Recruited 25 student officers with clearly defined responsibilities. Increased budget by 50% through fundraising. Planned and executed numerous social and professional activities.

**Chair — CS Welcome Weekend Committee**

Mar 2018

Organized a weekend of activities for prospective CS graduate students. Led a team of 10 volunteers.

**Eagle Scout**

Aug 2007 - Present

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## Graduate Coursework

CS 839 (Probabilistic Graphical Models)	A
CS 576 (Bioinformatics)	A
CS 726 (Nonlinear Optimization)	BC
CS 760 (Machine Learning)	A
CS 577 (Intro to Algorithms)	A
CS 703 (Program Verification and Synthesis)	A
CS 704 (Principles of Programming Languages)	A
CS 761 (Advanced Machine Learning)	A
CS 540 (Intro to AI)	A
CS 524 (Intro to Optimization)	AB

### PhD Minor Coursework

GENETICS 662 (Genetics of Cancer)	A
GENETICS 466 (Intro to Genetics)	AB
STAT 610 (Statistical Inference II)	A

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## Teaching

CS 240 (Discrete Mathematics)	TA	Fall 2016
CS 540 (Artificial Intelligence)	TA	Spring 2018
CS 300 (Introductory Programming)	TA	Summer 2018
CS 760 (Machine Learning)	TA	Spring 2019

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## Personal Interests

Backpacking; running; triathlons; bicycle touring; reading books.