Ashley K. W. Warren

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SUMMARY

Math PhD who specializes in systems of linear and polynomial equations. After 10 years in academia, I'd like to transition to a career where my analytical skills can help others to make data-driven decisions. I love problem-solving, writing/learning code, and presenting hard topics in an attractive, down-to-earth way to a diverse audience.

SKILLS

- LaTeX, Python (pandas, BeautifulSoup/selenium, json), HTML/CSS, R/RStudio, JavaScript (d3.js), Macualay2.
- Written and verbal communication. Excellent with attention to detail. Organized, objective- and efficiency-oriented. Can work independently or with a team. Delegation of responsibilities. Quick learner.

WORK EXPERIENCE

Visiting Assistant Professor (VAP)   **Centre College** *(Danville, KY)*   **Fall 2023 - Spring 2024 (FT)**
- Intro to stats with RStudio, ~140 students. Mathematics in our society, 11 students. Debugged students' code in RStudio, helped students clean their final project data using MS Excel and R commands, facilitated and mediated group activities. Increased efficiency via the course management system Moodle and its gradebook application. Contributed to the department's statistics problem bank for automated Moodle quizzes and exams using Moodle's syntax for randomized questions.
- Addressed the problem of faculty frequently running out of time to present lecture materials by cutting the materials down 25% and typing solutions to all of them. Transcribed MS Word documents to LaTeX.

VAP   **Georgia Institute of Technology (Georgia Tech)** *(Atlanta, GA)*   **Fall 2021 - Spring 2023 (FT)**
- Intro and intermediate linear algebra, ~100 students each. Graduate level commutative algebra, ~20 students.
- Organized the weekly faculty algebra seminar (invited outside speakers, managed the website).

VAP   **Mount Holyoke College (MHC)** *(South Hadley, MA)*   **July 2018 - June 2021 (FT)**
- Women's college.
- Calc I-III, group theory, ring theory, and discrete math, ~30 students each. Prepared materials for the 2020-2021 SY using LaTeX Beamer, Moodle, Gradescope, and Zoom. Prepared user guides for all of the technology used in the course. Flipped course structure; recorded pre-lecture videos and conducted synchronous instruction.
- Published *Geometric equations for matroid varieties* ([Arxiv version](#)).

VAP   **James Madison University** *(Harrisonburg, VA)*   **Fall 2017 - Spring 2018 (FT)**
- Calc I-II and linear algebra with differential equations, ~30 students each. Taught students how to use SageMath commands to visualize and solve differential equations.

VAP   **University of Arkansas (UArk)** *(Fayetteville, AR)*   **Fall 2014 - Spring 2017 (FT)**
- Calc I and III, survey of calculus, and discrete math, 50-100 students each.
- Maintained a professional website and course webpages using HTML source code without a template.

LEADERSHIP

Mentor   **ICERM, Brown University** *(Providence, RI)*   **10 - 14 June 2024 (FT)**
- Roots of Unity at Institute for Computational and Experimental Research in Mathematics (ICERM). Graduate student workshop targeted at students of color who are women, nonbinary, and/or gender fluid.
- Guided the students through two classic papers on Gorenstein rings.
- Virtual inclusivity training (May 2024).

Teaching Assistant   **Erdös Institute (EI)** *(Online)*   **May 2023 (PT)**
- [Leadership certificate](#). Data science boot camp. Ran daily problem sessions and guided participants in machine learning exercises using Python.

Research Mentor (RM)   **Georgia Tech**   **Summer 2022 (FT)**
- Georgia Tech Research Experience for Undergraduates (REU). Recruited and selected three minoritized students from among hundreds of applicants to contribute to a research project on toric ideals. Applications in integer programming, mirror symmetry, coding theory, algebraic statistics, and geometric modeling.
- Organized weekly professional development seminars for all participants (~30). Taught participants how to write technical papers, prepare slide shows, and make posters using LaTeX, via direct instruction and with templates I created.
- Controlled the budget for the participants' recreational activities (pizzas, museum visits, etc.).
- Presented results at Joint Math Meetings (JMM) 2023.

RM   **Simons Laufer Mathematical Sciences Institute (SLMSI)** *(Berkeley, CA)* **Summer 2016 (FT)**
- Formerly Mathematical Sciences Research Institute Undergrad Program (MSRI-UP). Summer research program for minoritized students.
- Produced and presented background group theory slides, up through the classification theorem for finitely generated abelian groups, with an introduction to sandpile groups. Included exercises with full solutions.
- Published *The sandpile group of a thick cycle graph* ([Arxiv version](#)).

SERVICE

Judge   **MHC**   **November 2018**
- HackHolyoke. 24 hour hackathon. Over 50% of participants identifying as women and/or first-time hackers. Judge selection by invitation only.

Faculty Advisor (FA)   **MHC**   **Fall 2018 - Fall 2019**
- William Lowell Putnam Math Competition (Putnam). Top score: 10/120 (national average: 0/120).

Organizer   **MHC**   **Spring 2018 - Spring 2019**
- Discrete Math Days of the Northeast. Annual conference. Chose and invited speakers, recruited students.

FA   **UArk**   **Fall 2016**
- Putnam. Top score: 26/120.

PROFESSIONAL DEVELOPMENT

Data Science Boot Camp   **EI**   **May 2024**
- [Certificate of completion](#). Data collection, data analysis and exploration, data cleaning, supervised and unsupervised learning.

Data Visualization Minicourse   **EI**   **Spring 2023**
- [Certificate of completion](#). Plotting in Python (matplotlib, seaborn, plotly, bokeh), web browser visualizations: HTML (CSS, SVG, d3.js), basic Tableau, basic design principles.

African Diaspora Joint Mathematics Workshop   **SLMSI**   **Summer 2021**
- Adventures in constructive Galois theory. Studied parametrizations of Galois extensions.

Women in Commutative Algebra Banff International Research Station *(Alberta, Canada)* **October 2019**
- *[Toric and tropical Bertini theorems in positive characteristic](#)*. Presented at JMM 2022 and other conferences.

Mathematics Research Communities American Mathematical Society *(Snowbird, UT)*   **Summer 2015**
- *[Finiteness of associated primes of local cohomology modules over Stanley-Reisner rings](#)*. Presented at JMM 2017 and other conferences.

ADDITIONAL PROJECTS

[Adventures in Learning Code](#)   **Summer 2017 - Present**
- Blog, written using Markdown. Posts about learning to code, a few machine learning posts.

["Do nothing" Congress](#)   **May 2024**
- Uses Python to aggregate data from Legiscan API, then predict whether a bill introduced in the 118th Congress will become law. Over 15,000 bills in the training data.

[Ashley's Fitbit Stats](#)   **April 2023**
- Dashboard displaying a year's worth of my Fitbit data (exercise time and how it impacted my resting heart rate and quality of sleep). Graphics made using d3.js.

[538 Project](#)   **March 2023**
- Python script that scrapes metadata from over 1,000 fivethirtyeight.com features pages. Includes a separate function to render JavaScript on each page to scrape data from the Facebook comments plugin.

[Calculus Videos](#)   **Spring 2022**
- Youtube videos on calculus topics: derivatives, related rates, linear approximation, graphing a function.

[Virtual Inspiring Talk](#)   **Fall 2020**
- Youtube playlist presenting the results from *Geometric equations for matroid varieties*. Heavy on linear algebra, aimed at an undergraduate audience. Advice for members of minoritized groups who wish to pursue a PhD in mathematics.

EDUCATION

PhD, Mathematics   **University of Michigan** *(Ann Arbor, MI)*   **2014**
- *Ideals Generated by Principal Minors*, under Mel Hochster. Solving systems of polynomial equations. Published in two parts: Arxiv version of [part 1](#) and [part 2](#).
- Embedded MS, Mathematics, 2011.

BS, Mathematics   **Kansas State University** *(Manhattan, KS)*   **2008**
- Minor in Physics.
- McNair Scholar: *Symplectic topology of Hamiltonian systems with one degree of freedom*, under Ricardo Castaño-Bernard.