Jamelle Watson-Daniels

CURRICULUM VITAE — FEBRUARY 2024

(618) 960-7868
www.jamellewd.com
jwatsondaniels@g.harvard.edu

EDUCATION	**Harvard University**	EXPECTED 2024
	PhD in Applied Mathematics	
	Advisors: David C. Parkes (Harvard), Berk Ustun (UCSD)	
	Brown University	2011 – 2016
	BS in Physics, BA in Africana Studies	

RESEARCH INTERESTS

Areas: Applied Machine Learning, Algorithmic Fairness, Model Reliability

SELECTED EXPERIENCE

Harvard University. Cambridge, MA — SEPT 2018 – MAY 2024
PhD Researcher
Conduct independent research in applied Machine Learning. Initiate, design and execute novel computational experiments. Spearhead collaboration between 2 principal investigators. Present research in local meetings and international scientific conferences. Manage paper submission process (write, edit, redraft). Mentor >50 students + Equity, Diversity & Inclusion Chair for >400 students.

Google. Remote — SUMMER 2023
PhD Research Intern
Lead research project drawing connections between state of the art methods and industry product issues. Distill and communicate relevant research concepts to engineering team. Communicate research results in the context of intended business goals. First author publication under submission.

Microsoft Research. Atlanta, GA — SUMMER 2022
Fairness, Accountability, Transparency & Ethics Research Intern
Lead research project on a team of three Principal Researchers in the Fairness, Accountability, Transparency and Ethics (FATE) group at Microsoft Research. First author publication accepted and presented. Project description: When translating business goals into tractable machine learning tasks, it is not obvious which target variable helps decision makers achieve their goals while minimizing disparities. Therefore, we present a mathematical and computational framework for evaluating the algorithmic fairness implications of this flexibility in target variable choice. Our framework supports fairness testing during problem formulation long before model deployment.

Data for Black Lives. Cambridge, MA — FEB 2020 – FEB 2022
Director of Research
Lead the development and management of research initiatives with the leadership team, partner organizations and community members (focused on community data literacy and data access). Spearhead and chart research agenda for start up alongside executive director and senior staff. Hire and manage associate level staff. Facilitate and support connections between organizers/activists and data scientists. First author white papers published.

AWARDS & HONORS

Princeton Pathway into the Academy Scholar	2022
NSF Graduate Research Fellow	2020
Ford Foundation Pre-doctoral Fellow	2019
Brown University Commencement Speaker	2016
Brown University Joslin Student Leadership Award	2016
Brown University Mildred Widgoff Award (excellence in thesis)	2016
Brown University Royce Fellow (independent research award)	2015
Brown University Undergraduate Research Award	2015
US Compact Muon Solenoid Fellowship	2013
Brown University International Scholars Fellowship	2013

PUBLICATIONS COMPUTER SCIENCE

1. Mysterious Projections: Multimodal LLMs Gain Domain-Specific Visual Capabilities (in progress)
   Gaurav Verma, Minje Choi, Kartik Sharma, **Jamelle Watson-Daniels**, Sejoon Oh, Srijan Kumar

2. Algorithmic Fairness and Color-blind Racism: Navigating the Intersection
   Jamelle Watson-Daniels
   under submission, 2024

3. Predictive Churn with the Set of Good Models
   Jamelle Watson-Daniels, Flavio du Pin Calmon, Alexander D'Amour, Carol Long, David C. Parkes, Berk Ustun
   AFT Workshop @ NeurIPS, 2023

4. Multi-Target Multiplicity: Flexibility and Fairness in Target Specification under Resource Constraints
   Jamelle Watson-Daniels, Solon Barocas, Jake M. Hofman, Alexandra Chouldechova
   FAccT – ACM Conference on Fairness, Accountability, and Transparency, 2023

5. Predictive Multiplicity in Probabilistic Classification
   Jamelle Watson-Daniels, David C. Parkes, Berk Ustun
   AAAI Conference on Artificial Intelligence, 2023

6. An Analysis of Emotions and the Prominence of Positivity in #BlackLivesMatter Tweets
   Anjalie Field, Chan Young Park, Antonio Theophilo, **Jamelle Watson-Daniels**, Yulia Tsvetkov
   Proceedings of the National Academy of Sciences of the United States of America, 119(35), Aug 2022

PHYSICS

7. Magnetically Aligned Nanorods in Alginate Capsules
   L. Mair, [et al, including **Jamelle Watson-Daniels**]
   Micromachines, Volume 10, Issue 4, 2019

8. Magnetic Drilling Enhances Intra-nasal Transport of Particles into Rodent Brain
   S. Jafari, [et al, including **Jamelle Watson-Daniels**]
   Journal of Magnetism and Magnetic Materials, Volume 469, 2019

9. Image-guided Placement of Magnetic Neuroparticles as a Potential High-Resolution Brain-Machine Interface
   I. Weinberg, [et al, including **Jamelle Watson-Daniels**]
   Evolving BCI Therapy: Engaging Brain State Dynamics, 2018

10. Test Beam Demonstration of Silicon Microstrip Modules with Transverse Momentum Discrimination
    W. Adam, [et al, including **Jamelle Watson-Daniels**]
    JINST – *Journal of Instrumentation, Volume 13 P03003*, 2018

11. Characterisation of Irradiated Thin Silicon Sensors for the CMS Phase II Pixel Upgrade
    W. Adam, [et al, including **Jamelle Watson-Daniels**]
    The European Physical Journal C, Volume 77, Issue 8, 2017

12. P-Type Silicon Strip Sensors for the New CMS Tracker at HL-LHC
    W. Adam, [et al, including **Jamelle Watson-Daniels**]
    JINST – *Journal of Instrumentation, Volume 12 P06018*, 2017

13. Mechanical Stability of the CMS Strip Tracker Measured with a Laser Alignment System
    A. M. Sirunyan, [et al, including **Jamelle Watson-Daniels**]
    JINST – *Journal of Instrumentation, Volume 12 P04023*, 2017

14. Trapping in Proton Irradiated p^+-n-n^+ Silicon Sensors at Fluences Anticipated at the HL-LHC Outer Tracker
    W. Adam, [et al, including **Jamelle Watson-Daniels**]
    JINST – *Journal of Instrumentation, Volume 11 P04023*, 2016

15. [Undergraduate-driven interventions to increase representation in science classrooms](#)
    M. Freilich, [et al, including **Jamelle Watson-Daniels**]
    AGU – *American Geophysical Union Fall Meeting*, 2014

| TEACHING EXPERIENCE | **Harvard University** | FALL 2020 |
| | *CS 182: Introduction to Artificial Intelligence* | RATING: 4.7/5.0 |

Teaching Fellow
Taught weekly section covering course material in planning and search algorithms, probabilistic reasoning and representations, and machine learning. Designed and graded assignments for ∼100 undergraduate students.

Design and Creation of Brown University Course — FALL 2014
Co-designed a course entitled **Race and Gender in the Scientific Community** that is now offered annually in the Applied Math department at Brown University.

INVITED TALKS	Mila - Quebec AI Institute Tea Talk - Model Multiplicity in ML	2024
	US Covid Atlas Keynote	2023
	Oral Presentation at AAAI	2023
	NeurIPS Black in Ai Spotlight Talk	2022
	Talking Data Equity - We All Count	2022
	Starbucks Analytics and Insights - Racial Equity Session	2021
	NeurIPS Workshop on Resistance AI	2020
	ICML Workshop on Participatory Approaches in ML	2020
	Yale Human in STEM Keynote	2019

INVITED PANELS & WORKSHOPS	Ivy Collective's Inclusivity in Engineering Doctoral Symposium	2022
	Georgia State University: Data Literacy as a Tool for Social Justice	2021
	Brooklyn Public Library: Panel on Racial Justice, Technology, and Digital Bias	2021
	Harvard Tech Review: Panel on Combating Racism through Data-Driven Technology	2020
	Data for Black Lives: Panel on Education Justice & Mathematics	2018
	APS CUWiP: Workshop on Inclusivity and Intersectionality	2017
	Brown University Physics: Workshop on Race and Gender in the Scientific Community	2015

LEADERSHIP EXPERIENCE

Harvard College: Lowell House. Cambridge, MA — 2019 – 2022
Resident Tutor & Equity, Diversity & Inclusion Chair
Live-in advisor for over 400 undergrads and official academic advisor for select sophomores. Designed inclusive programs and events to promote social consciousness and challenge students to consider current institutional, national, global, and sociopolitical systems of privilege and oppression.

Harvard Women in STEM. Cambridge, MA — 2018 – 2020
Mentor
Share career decisions and insights with undergraduate women at Harvard to help retain women in STEM fields. Help students prepare research presentations and plan for careers post-graduation.

Brown University Diversity Advisory Board. Providence, RI — 2014 – 2016
Student Leader Representative
Attended regular meetings to advise the Associate Provost, Director of Institutional Diversity and other senior officers as appropriate concerning the promotion of diversity and the development of a welcoming and inclusive campus climate. Helped identify ways to educate the community about diversity and provide guidance for dealing with community issues.

Brown University New Scientist Program. Providence, RI — 2014 – 2016
Mentor & Student Advisor

Met 1-on-1 with underrepresented undergraduates to build plans for navigating STEM departments. Advocated for students in extraordinary circumstances and in need of extra institutional support. Ultimately, presented recommendations for restructuring the program to better empower students.

Inertia: Initiative to invest in scientists of color. Providence, RI   2013 – 2015
Lead Organizer
Led a student initiative ran across Brown University administrative offices (including Dean of the Faculty, Dean of the College, Office of Institutional Diversity) in an effort to better support Black students pursuing STEM degrees. Partnered with Undergraduate Council of Students to submit a written resolution on the issues.

SELECTED
PROFESSIONAL
EXPERIENCE

Weinberg Medical Physics. Rockville, MD   2017 – 2018
Physicist
Worked towards creating a small low-field MRI, which would provide hospitals with a low-cost portable imaging option. Developed a software suite to operate our hardware as a spectrometer, building on existing Python code. Also, created multiple models of the magnetic field designs and developed code for the correlated pulse sequences.

Boeing. St. Louis, MO   2016 – 2017
Software Engineer
Supported the design and development of software by updating the data analytics system in node.js (javaScript) and troubleshooting the existing aircraft simulation environment. applied the dynamics of classical ray tracing to model how windshield glass distorts the vision of an airplane pilot to correct that distortion to inform design parameters of a new optical display. Similarly, used perturbation theory to model display distortion that occurs when the aircraft experiences different amounts of vibration from turbulence in MATLAB.

PERSONAL

Citizenship: USA
Languages: Fluent in English, Intermediate Spanish
Software: Expert in Python, Proficient in MATLAB and R, Familiar with Java and HTML.
Interests: Mindfulness, Blogging, Interior Design