Sarah M **Brown**

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Education & Training

Postdoctoral Research Associate, Data Science Initiative and Division of Applied Mathematics

BROWN UNIVERSITY

Providence, RI

August 2018 - July 2020

- Host: Bjorn Sandstede

Chancellor's Postdoctoral Fellow, Computer Science

UNIVERSITY OF CALIFORNIA, BERKELEY

Berkeley, CA

January 2017 - July 2018

- Adviser: Michael I Jordan,   Proposal title: Machine Learning with Impact

PhD, Electrical Engineering

NORTHEASTERN UNIVERSITY

Concentration: Signal Processing, Minor: Math

Boston, MA · December 2016

Dissertation Title: Machine Learning Methods for Computational Psychology

MS, Electrical and Computer Engineering

NORTHEASTERN UNIVERSITY

Concentration: Signal Processing

Boston, MA · January 2014

Thesis Title: Machine Learning Analysis of Peripheral Physiology for Emotion Detection

BS, Electrical Engineering

NORTHEASTERN UNIVERSITY

Minor: Biomedical Engineering

Boston, MA · May 2011

Publications

PEER REVIEWED CONFERENCES

Chenguang Xu, **Sarah Brown**, Christan Grant and Chris Weaver. "Hybrid Tree Visualizations for Analysis of Gerrymandering" ISVC'23

C Malik Boykin, Dasch, Sophia T*., Vincent Rice*, Venkat R. Lakshminarayanan, Taiwo Togu, and **Sarah M. Brown**. "Opportunities for a More Interdisciplinary Approach to Perceptions of Fairness in Machine Learning," inaugural ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization 2021

Brown, Sarah M, Rami Mangoubi, Andrea Webb, Jennifer Dy, "A Sparse Combined Regression-Classification Formulation for Learning a Physiological Alternative to Clinical Post-Traumatic Stress Disorder Scores" Twenty-Ninth AAAI Conference on Artificial Intelligence, 2015

Brown, Sarah M, Mario Hulett, "Variety of Community Partnerships in Related Programs" American Society for Engineering Education, Annual Conference and Exposition June 2013

Brown, Sarah M, Lauren .D. Thomas, "Technical Outreach Community Help: Initial Results" American Society for Engineering Education, Annual Conference and Exposition June 2011

JOURNAL ARTICLES

Christiana Westlin, Jordan E. Theriault, Yuta Katsumi, Alfonso Nieto-Castanon, Aaron Kucyi, Sebastian F. Ruf, **Sarah M. Brown**, Misha Pavel, Deniz Erdogmus, Dana H. Brooks, Karen S. Quigley, Susan Whitfield-Gabrieli, Lisa Feldman Barrett, Improving the study of brain-behavior relationships by revisiting basic assumptions, Trends in Cognitive Sciences, 2023, ISSN 1364-6613, `https://doi.org/10.1016/`

`j.tics.2022.12.015.`

CHAPTERS

Bokin, Malik C; Monroe-White, THema; and Brown, Sarah M. "Teaching Algorithmic Literacy to Diverse Learners to Assess Preferences for Algorithmic Fairness: An Affirmative Development Approach" in The Minister of Education: The 100-Year Intellectual Legacy of Professor Edmund W. Gordon TCPress (to appear)

WORKSHOPS

Surbhi Rathore and **Sarah M Brown**. "Information Theoretic Framework for Evaluation of Task Level Fairness. 1st ACM SIGKDD Workshop on Ethical Artificial Intelligence: Methods and Applications

Brown, Sarah M "Participatory Live Coding and Learning-Centered Assessment in Programming for Data Science" Teaching Machine Learning Workshop at ECML 2021

Dasch, Sophia T.*, Vincent Rice*, Venkat R. Lakshminarayanan, Taiwo Togu, C Malik Boykin, and **Sarah M. Brown**. "Opportunities for a More Interdisciplinary Approach to Perceptions of Fairness in Machine Learning," NeurIPS Workshop on ML Retrospectives, Surveys and Meta Analyses 2020.

Kwekir-Aggrey, Kweku and **Brown, Sarah M** "Measuring Bias with Wasserstein Distance." NeurIPS 2020 Workshop on Workshop on Dataset Curation and Security. 2020

Dai, Jessica, **Brown, Sarah M** "Label Bias, Label Shift: Fair Machine Learning with Unreliable Labels" Workshop on Consequential Decisions in Dynamic Environments NeurIPS 2020 Jessica worked under my supervision on problems I proposed, I taught foundational research skills; Jessica carried out work and writing based on our discussions

Brown, Sarah M, Xu, Chenguang, Grant, Christan, "Critical Data Exploration with Simpson's Paradox" Women in Machine Learning and Black in AI 2018

Xu, Chenguang, **Brown, Sarah M**, Grant, Christan, "Detecting Simpsons Paradox" Thirty-first FLAIRS, 2018.

Experience

Brown University Division of Applied Mathematics
Providence, RI

POSTDOCTORAL RESEARCH ASSOCIATE, DATA SCIENCE INITIATIVE
August 2018 - present
- Directed an independent research program in fair machine learning
- Co-taught an interdisciplinary Data and Society Course
- Established and lead working group on Algorithmic Fairness
- Supervised undergraduate researchers through independent studies and competitive funding opportunities

University of California, Berkeley Division of Computer Science
Berkeley, CA

CHANCELLOR'S POSTDOCTORAL FELLOW, STATISTICAL ARTIFICIAL INTELLIGENCE LABORATORY
January 2017 - July 2018
- Adviser: Michael I Jordan
- Proposal title: Machine Learning with Impact
- Advised undergraduate research assistants
- Conducted independent research and transistioned from neuroscience applications to fairness

Service

INSTITUTIONAL

Fall 2022-Spring 2023	**Chair**, Advisory Board Planning committee	*URI*
Fall 2022-Spring 2023	**member**, Computer Science Undergraduate Committee	*URI*
Fall 2021-present	**member**, Data Science Undergraduate Committee	*URI*
Fall 2020-present	**member**, Computer Science Graduate Committee	*URI*
2020-2021	**member**, Data Science Ad hoc Committee	*URI*

SEARCH COMMITTEES

Fall 2022-Spring 2023	**member**, Computational Biology Discipline Based Educational Research Tenure Track Search Committee	*URI*
Fall 2022	**member**, Computer Science Department Chair Search Committee	*URI*
Fall 2021-Spring 2022	**member**, Computer Science Lecturer Search Committee	*URI*

REVIEWING

2022,2023	**Area Chair**, ACM Fairness, Accountability and Transparency Conference	
December 2021	**Reviewer and Panelist**, CISE Research Experiences for Teachers Program	*NSF*
2022, 2023	**Reviewer**, Ethics Reviewer Neural Information Processing Systems (NeurIPS)	
2018, 2020,2021	**Reviewer**, Neural Information Processing Systems (NeurIPS)	
2021,2022	**Reviewer**, NeurIPS workshop: Algorithmic Fairness through the Lens of Causality and Robustness	
2021	**Reviewer**, ACM Fairness, Accountability and Transparency Conference	
2021	**Reviewer**, AAAI Undergraduate Consortium	
2020	**Reviewer**, NeurIPS Workshop on Dataset Curation and Security	
2020	**Reviewer**, AAAI Emerging Track on AI for Social Impact	
2020	**Reviewer**, EAAI Special Paper Track: Diversity and Inclusion in AI Education	
2017, 2018, 2019, 2020,2022	**Reviewer, Area Chair**, Black in AI Workshop (BAI)	
2017,2021	**Reviewer**, International Conference on Machine Learning (ICML)	
2016,2017	**Reviewer**, Machine Learning for Healthcare Conference (MLHC)	
2014, 2016,2018	**Reviewer**, Women in Machine Learning Workshop (WiML)	
2017	**Scholarship Reviewer**, Broadening Participation in Datamining (BPDM)	
2015	**Scholarship Reviewer**, National Society of Black Engineers	

PROFESSIONAL ORGANIZATIONS

ACM Conference on Fairness Accountability, and Transparency *September 2022 - August 2024*
DIVERSITY AND INCLUSION CO-CHAIR
appointed position

The Carpentries *March 2021- March 2023*
INSTRUCTOR TRAINER COMMUNITY LEADERSHIP COMMITTEE
elected twice to Committee by trainer community, Chair by consensus of committee in 2021

2021 ACM Conference on Fairness Accountability, and Transparency *September 2020- March 2021*
VIRTUAL EXPERIENCE CHAIR
appointed position

Women in Machine Learning *2014, January 2016- March 2019*
CO-ORGANIZER AND FINANCE CHAIR, TREASURER

Teaching and Mentoring

INSTRUCTOR OF RECORD

Computer Systems and Programming Tools *Spring 2022-2024, Fall 2022-2023*

INSTRUCTOR *Computer Science and Statistics*
Department, University of Rhode Island

- Materials available: Spring 2024 Site; General course information
- new undergraduate course developed, taught as CSC 392 Topics

Machine Learning for Science and Society *Spring 2021, 2022,2024*

INSTRUCTOR *Computer Science and Statistics*
Department, University of Rhode Island

new graduate course developed, taught as CSC 592 Topics

CSC 310/DSP 310: Programming for Data Science *Fall 2020-2023, Spring 2023*

INSTRUCTOR *Computer Science and Statistics*
Department, University of Rhode Island

- Materials available: Fall 2023 Site; Fall 2020 Site
- Implemented Mastery-based grading
- Delivered instruction via Participatory Live Coding

DATA 2080: Data & Society *Spring 2019,2020*

TECHNICAL CO-INSTRUCTOR *Data Science Initiative, Brown University*
- Required MS course
- Interdisciplinary course covering societal impact of data science and associated technical challenges

WORKSHOPS AND MENTORING

Talent Development STEM Academy *August 2021*

INSTRUCTOR, LAB LEADER
- 2021: Taught 1.5 hours of CS instruction for week 2 of STEM Academy, replicating COMPAS Data analysis. Materials available online
- 2022: Ran 3 weeks of 2 sections of labs that met twice per week for incoming CS major TD Scholars

Black in AI *June-August 2021*

SUMMER RESEARCH MENTOR
mentor to 1 grant recipient

Data Carpentry and Software Carpentry *October 2017-present*

CERTIFIED INSTRUCTOR AND INSTRUCTOR TRAINER
- Certified as instructor by after 2 training and passing a 5 minute teaching demonstration using live coding
- Taught python at UCSF Software Carpentry workshop [materials: `drsmb.co/ucsfgit`
- Taught data management and visualization with Python at 2018 NSBE Annual Convention: drsmb.co/nsbe44
- Taught Data Organization and Python for Social Scientists at UC Berkeley, CarpentryConnect Johannesburg 2018, 2019 NSBE Annual Convention
- Taught Data Organization and Cleaning Data with Openrefine for Social Scientists at NYU
- Certified as instructor trainer after selection from applicant pool, 8 week online training, observing teaching, observing teaching demos
- Taught Instructor Training workshop online- June 2019, Jan 2020, June 2020, January 2021, June 2021, at Carnegie Mellon University Library September 2019
- Host evaluative teaching demos quarterly, each certifying up to 5 trainees

Relevant Training

Duke University Identity in Computing Group *February-June 2021*

CULTURAL COMPETENCE IN COMPUTING (3C) FELLOWS PROGRAM

Mozilla Foundation   *August-December 2018*
Mozilla Open leaders
formal training and mentored application of lessons in open source project leadership and community development

the Carpentries   *Jan-March 2019*
Instructor Trainer Training
eight week study group with one hour discussion sessions, certification by observing a training and teaching demonstration evaluation and reflecting with a certified trainer

the Carpentries   *August 2017*
Instructor Training
two day workshop followed by 3 step certification process

Presentations, Panel Invitations, Media

Integrating Ethics into Data Science Courses
Regional Data Science Meeting   *September 16, 2022*
• invited talk

Communicating Alternative Grading Schemes: How to shift students' attention to their learning from grades
ACM Special Interest Group on Computer Science Education   *March 2022*
• Birds of a feather joint with Victoria Chavez

Workshop: Centering Learning and Equity in Assessment and Evaluation
Tapia Celebration of Diversity in Computing   *September 2021*
• accepted 90min workshop proposal, joint with Victoria Chavez

Fireside Chat on Bias in AI Systems
IBM Research: Social Justice Seminar Series   *June 2 2021*
• invited speaker

ATL Conversation: Grading for Learning
panelist   *March 2021*
• invited panelist

This Week in ML Podcast
Towards a System Level Approach to Fair ML   *February 15 2021*
`https://twimlai.com/towards-a-systems-level-approach-to-fair-ml-with-sarah-m-brown/`
Welcome panel
AAAI Reframing Diversity in AI: Representation, Inclusion and Power Workshop   *February 2021*
• invited panelist

Ethical oversight in the peer review process Panel
Navigating the Broader Impacts of AI Research workshop   *December 12 2020*
• invited panelist

An Interdisciplinary Approach to Perceptions of Fairness in Machine Learning
UC Berkeley Institute of Personality & Social Research Colloquium   *December 2 2020*
• invited talk joint with C. Malik Boykin

Choosing a Dissertation Topic Birds of Feather
Tapia Celebration of Diversity in Computing   *September 2020*
• invited panelist

AI Model Construction Panel   *Providence, RI*
Citizen's Bank Best Practices in AI Conference   *November 15, 2019*
• invited moderator

Wiggum: Simpson's Paradox Inspired Fairness Forensics   *Ann Arbor, MI*
University of Michigan AI Lab Symposium   *October 19, 2019*
• invited poster and lightning talk

Wiggum: Simpson's Paradox Inspired Fairness Forensics

MATHEMATICS & COMPUTER SCIENCE DEPARTMENT COLLOQUIUM

Providence, RI

October 9, 2019

- invited

Pathways into AI with Black in AI

NATIONAL SOCIETY OF BLACK ENGINEERS

Detroit, MI

March 27, 2019

- co-organizer and panelist

Funding and Awards

RESEARCH FUNDING

Information Theoretic for Task Level Fairness in AI Applications

2021 IBM GLOBAL UNIVERSITY PROGRAM ACADEMIC AWARD: $ 42,041

IBM

August 2021 - May 2022

SCHOLARSHIPS AND SERVICE AWARDS

April 2016	**Outstanding Graduate Student Award for Community Service**, Northeastern University
February 2013	**Mike Shinn Distinguished Member of the Year**, National Society of Black Engineers
March 2012	**BESS, SHPE and SWE Joint Alumni Award**, Northeastern University student chapters
April 2011	**Ronald Guyer Porter Memorial Award**, Northeastern University Electrical and Computer Engineering Department
April 2011	**Outstanding Co-op Award, Engineerirng**, Northeastern University

TRAVEL AND PROFESSIONAL DEVELOPMENT

December 2012, 2015, 2018	**Poster Presenter, travel scholarship**, Women In Machine Learning Workshop, co-located with Neural Information Processing System	*South Lake Tahoe, NV; Montreal, QC, Canada*
June 2018	**Lightning Talk, Poster Presenter, travel scholarship**, CarpentryCOn	*Dublin, Ireland*
May 2017	**Participant**, Launching Academics on the Tenure Track: an Intentional Community in Engineering	*Bainbridge Island, WA*
February 2016	**Participant and Presenter, travel funded**, Association for the Advancement of Artificial Intelligence Doctoral Consortium	*Pheonix, AZ*
October 2015	**Workshop attendee, travel funded**, University of Michigan College of Engineering NextProf Workshop	*Ann Arbor, MI*
April 2014	**Workshop attendee, travel funded**, CRA-W Graduate Cohort Workshop	*Santa Clara, CA*
2013	**Selected as attendee; 26% acceptance rate**, Machine Learning Summer School	*Tubingen, Germany*
August 2013	**Partial travel scholarship**, Broadening Participation in Datamining Workshop	*Chicago, IL*

Student Supervision

GRADUATE STUDENT COMMITTEES

CS MS Committee Chair

EMMELY TREJO ALVAREZ

Committee formed Spring 2022

Fall 2021-

University of Rhode Island

CS MS Committee Chair; PhD Major Profesor

SURBHI RATHORE

Proposal passed Spring 2022

Fall 2021-Fall2022; Spring 2023-

University of Rhode Island

UNDERGRADUATE RESEARCH MENTORING

Kyle Nadeau

PROJECT CREDIT

ML for Antimicrobial Peptide Design

Fall 2023

University of Rhode Island

Isaac Gabba *Fall 2022*
LSAMP SCHOLAR *University of Rhode Island*
Bias Modeling and Fair Classifiers

Chris Demaria *Spring*
PROJECT CREDIT *University of Rhode Island*
Bias Modeling and Fair Classifiers

Dom Silva *Spring 2023*
PROJECT CREDIT *University of Rhode Island*
Bias Modeling and Hacking intervals for audits

Yusra Sahil *Fall 2022*
PROJECT CREDIT *University of Rhode Island*
apps

Yemi Fasina *Fall 2022*
LSAMP SCHOLAR *University of Rhode Island*
Bias Modeling and Fair Classifiers

Linda Tran *Summer 2022*
LSAMP SCHOLAR *University of Rhode Island*
Ecologically Valid stimuli for perceptions of AI In healthcare

Aiden Hill *Summer 2022- present*
STARTUP *University of Rhode Island*
Bias Modeling and Fair Classifiers

Justin Biancamano *Summer 2022*
DIRECTED STUDY IN CS *University of Rhode Island*
Bias Modeling and Fair Classifiers

Marie Mellor *Spring 2022- Summer 2022*
DIRECTED STUDY IN CS; STARTUP *University of Rhode Island*
Tools for replicable machine learning experiments

CJ Morris *Spring 2022*
DIRECTED STUDY IN CS; *University of Rhode Island*
Bias Modeling

Caroline Sadler *Spring 2022*
STARTUP *University of Rhode Island*
Software organization and speedup of Wiggum

Patrick Dowd *Summer-Fall 2021*
DIRECTED STUDY IN CS; STARTUP *University of Rhode Island*
Software organization and speedup of Wiggum

Jake Afonso *Summer 2021*
ARTS AND SCIENCES FELLOW *University of Rhode Island*
Bias Modeling and Fair Classifiers

Jacob Lussier *Spring 2021*
VOLUNTEER *University of Rhode Island*
Annotation of trend results in Wiggum

Zainab Edina *Spring 2021, Summer 2021*
LSAMP SCHOLAR *University of Rhode Island*
Comparison of visualization techniques for data summarization in bias evaluation

Warith Balofun *Spring 2021*
LSAMP SCHOLAR *University of Rhode Island*
Case studies in Simpson's Paradox

Brianna McDonald *Spring 2021*
DIRECTED STUDY IN CS *University of Rhode Island*
Empirical Evaluation of Bias Models and Fair Classifiers

Emmely Trejo Alvarez *Fall 2020, Spring 2021*
DIRECTED STUDY IN CS *University of Rhode Island*
Learning Hybrid Fair Classifiers with ADMM

Sean Zhan, Brian Kim *Summer 2020*
INTERNS IN BOYKIN LAB AT BROWN *Brown University*
App development for measuring perceptions of fairness and bias judgements

Pazia Bermudez-Silverman *Fall 2019, Spring 2020*
UNDERGRADUATE TEACHING AND RESEARCH AWARD, RESEARCH FOR CREDIT *Brown University*
Examining Fairness Interventions in Machine Learning: Empirical Validation and Social Grounding; University wide funding program

Evan Cater, Jules Becker, Rocio Jaime, David Cabatingan *Fall 2019*
COLLABORATIVE UNDERGRADUATE RESEARCH ASSISTANTSHIP *Brown University and Smith College*
jointly supervised with Katherine Kinnaird, Amy Greenwald, and Eric Jutkowitz Predicting Alzheimer's disease from Medicare data

Jessica Dai *Spring 2019, Fall 2019 - Spring 2020*
APPLIED MATHEMATICS DIRECTED READING PROGRAM, UNDERGRADUATE TEACHING AND RESEARCH AWARD *Brown University*
Fairness Interventions in the Real World: Quantifying Delayed and Disparate Impact; matched with a student through application process after posting project

Evan Cater, Will Povell *Fall 2018*
VOLUNTEER RESEARCH ASSISTANTSHIPS *Brown University*
jointly supervised with Katherine Kinnaird and Eric Jutkowitz Predicting Alzheimer's disease from Medicare data

Jennifer He *Fall 2018*
VOLUNTEER RESEARCH ASSISTANTSHIP *Brown University*
Data integration for Measuring the Causal Effect of Marijuana Reform on Racial Profiling; volunteer student recruited by speaking at Brown Data Science undergraduate club

Haile Shivers, Saaleha Bey *Fall 2017 - Spring 2018*
VOLUNTEER RESEARCH ASSISTANTSHIPS *University of California, Berkeley*
Elicitation of expert priors

Julia Spinelli *Summer - Fall 2016*
DATA DRIVEN DISCOVERY REU SITE *Northeastern University*
Brain network subtyping via Resting State cluster analysis; continued through fall as a volunteer

Michael Lin *Fall 2015 - Fall 2016*
HONORS EARLY RESEARCH ASSISTANTSHIP *Northeastern University*
Data driven emotional subtype discovery via experience sampling; jointly supervised with Christine Wilson-Mendenhall after volunteering, extended through 4 academic terms with funding in the last

Audrianna Simms *Fall 2015- Spring 2016*
VOLUNTEER RESEARCH ASSISTANTSHIP *Northeastern University*
Empirical analysis of ML stability; volunteer recruited through undergraduate research fair

Thomas Harmon *Fall 2015*
VOLUNTEER RESEARCH ASSISTANTSHIP *Northeastern University*
Data driven emotional subtype discovery via experience sampling; volunteer recruited through undergraduate research fair