

ERIN H. BUGBEE

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RESEARCH INTERESTS

Human and machine learning, decision science, data science, computational cognitive science, artificial intelligence, reinforcement learning, predictive analytics, statistical inference, moral psychology and AI, AI and data ethics

EDUCATION

Brown University

Sc.B., Statistics (Honors Candidate)

A.B., Behavioral Decision Sciences, Specialization in Human and Machine Learning

Overall GPA: 3.95/4.0

Providence, RI

Expected: May 2020

RESEARCH EXPERIENCE

Honors Senior Thesis and Senior Capstone

Advisors: Lorin Crawford, Ph.D. and Matt Nassar, Ph.D.

Brown University

Fall 2019 – Present

- Honors Thesis in Statistics, using reinforcement learning to inform how different agent personalities learn in various contexts. Senior Capstone in Behavioral Decision Sciences, studying reinforcement learning in dynamic environments to understand place field remapping in the hippocampus. *Languages: Python, MATLAB*

Sloman Lab Research Assistant

Advisor: Steven Sloman, Ph.D.

Brown University

Fall 2019 – Present

- The Future of Work: Performing experimental design, implementation, and data analysis to study human trust in machines for human and machine advisors across domains to anticipate and understand the future of work. *Tools: Qualtrics, Prolific, R*

Learning, Memory & Decision Lab Research Assistant

Advisor: Matthew Nassar, Ph.D.

Brown University

Spring 2019 – Present

- Studying reinforcement learning in dynamic environments to understand place field remapping in the hippocampus. Past work involved reinforcement learning for multi-armed bandits. Affiliated with Carney Institute for Brain Science.
Languages: MATLAB

Collaborative Research on Music Information Retrieval

Advisor: Katherine Kinnaird, Ph.D.

Brown University

Summer 2017 – Present

- Ongoing research applying techniques from machine learning and topological data analysis to music information retrieval tasks. *Languages: MATLAB, Python*

Crawford Lab Research Assistant*Advisor: Lorin Crawford, Ph.D.***Brown University***Fall 2017 – Fall 2018*

- Used Bayesian statistical modeling to detect genes involved in treatment resistance in prostate cancer. Collaboration with Duke University and the Duke Cancer Institute.
Languages: R

Summer@ICERM: Topological Data Analysis*Advisor: Katherine Kinnaird, Ph.D. and Jeffrey Brock, Ph.D.***ICERM***Summer 2017*

- Participated in Undergraduate Research Program in Topological Data Analysis affiliated with Brown Data Science Initiative. Developed an efficient and accurate method for detecting cover songs. *Languages: MATLAB*

PUBLICATIONS

Conference Papers*(Peer-Reviewed)*

McGuirl, M.R., Kinnaird, K.M., Savard, C., & **Bugbee, E.H.** (2018). SE and SNL Diagrams: Flexible Data Structures for MIR. *Proceedings of 19th International Society for Music Information Retrieval Conference*. Paris, France.

(Abstract-Reviewed)

Savard, C., **Bugbee, E.H.**, McGuirl, M.R., & Kinnaird, K.M. (2018). SuPP and MaPP: Novel MIR Data Structures Inspired by Topological Data Analysis. *Extended abstracts for the Late-Breaking Demo Session of the 19th International Society for Music Information Retrieval Conference*. Paris, France.

HONORS AND AWARDS

Brown Data Science Fellow*Spring 2020*

- Fellow in the first cohort of Data Science Fellows through the Harriet W. Sheridan Center for Teaching and Learning and the Brown Data Science Initiative.

Brown Department of Computer Science Undergraduate TAs*2019*

- Awarded Bob Petrocelli Head Undergraduate TAsip for Fall 2019.
- Awarded Class of '81 Undergraduate TAsip for Women in CS for Spring 2019.

Disney Data & Analytics Women Scholarship Recipient*August 2018*

- Scholarship to attend Disney Data & Analytics Conference in Orlando, FL.
- Presented music information retrieval machine learning research.

CLPS 0220: Making Decisions Top Grade*May 2018*

- Top 5 grade among 164 students in CLPS 0220: Making Decisions.

Outstanding Poster Award, Joint Mathematics Meetings*January 2018*

- For “Comparing Songs Using Matrix Pattern Preservation” in San Diego, CA.

INDUSTRY EXPERIENCE

Sales Analytics & Insights Intern

The Walt Disney Company

Orlando, FL

Summer 2019

- Analytics for the Disney Cruise Line, predicting Disneyland Anaheim attendance by determining leading indicators for international markets using regression analysis, analyzing flight data for John Wayne Airport.

Explore Microsoft Intern

Microsoft

Redmond, WA

Summer 2018

- Program Manager and Software Engineer for Microsoft Support Engineering Group, Universal Store Team, Cloud + AI division.

TEACHING EXPERIENCE

HEAD TEACHING ASSISTANT

CSCI 0100: Data Fluency for All

Fall 2019

Brown Department of Computer Science, Professor: Amy Greenwald, Ph.D.

- A data science course emphasizing data literacy, statistics, machine learning, and data visualization through the R programming language. Give guest lectures, lead TA staff, develop course materials, hold TA hours.

UNDERGRADUATE TEACHING ASSISTANT

NEUR 1660: Neural Computations Underlying Learning and Decision Making

Spring 2020

Brown Department of Neuroscience, Professor: Matthew Nassar, Ph.D.

CSCI 1951a: Data Science

Spring 2019

Brown Department of Computer Science, Professor: Ellie Pavlick, Ph.D.

- An upper-level computer science course teaching Python and SQL.

CLPS 0220: Making Decisions

Spring 2019

Brown Department of Cognitive, Linguistic, and Psychological Sciences, Professor: Steven Sloman, Ph.D.

- Decision making through normative and descriptive principles. Covers choice and preference, heuristics, reinforcement learning.

APMA 1655: Advanced Statistical Inference I

Fall 2018

Brown Department of Applied Mathematics, Professor: Caroline Klivans, Ph.D.

PHP 1501: Essentials of Data Analysis

Fall 2018

Brown Department of Biostatistics, Professor: Roe Gutman, Ph.D.

- Data analysis course using R with applications to biostatistics.

RESEARCH PRESENTATIONS

TALKS

Research Talk, “*Reinforcement Learning in Dynamic Environments for Place Cell Remapping*”

Learning, Memory & Decision Lab

Brown University, November 11, 2019

Research Talk, “*Comparing Songs Without Listening*”

Brown Math Slam (Society for Industrial and Applied Mathematics/AWM)

Brown University, November 8, 2018

Paper Presentation, “*SE and SNL Diagrams: Flexible Data Structures for MIR*”

The International Society for Music Information Retrieval Conference (ISMIR)

Paris, France, September 23-27, 2018

Workshop, “*Introduction to R Programming*”

Brown Datathon

Brown University, March 3, 2018

POSTER PRESENTATIONS

The International Society for Music Information Retrieval Conference (ISMIR)

“*SuPP and MaPP: Novel MIR Data Structures Inspired by Topological Data Analysis*”

Paris, France, September 23-27, 2018

Joint Mathematics Meetings

“*Comparing Songs Using Matrix Pattern Preservation*”

San Diego, CA, January 12, 2018

NEMISIG (Northeast Music Informatics Special Interest Group)

“*Comparing Songs Using Matrix Pattern Preservation*”

Brown University, January 27, 2018

Women in Data Science

“*Comparing Songs Using Matrix Pattern Preservation*”

Worcester Polytechnic Institute, March 5, 2018

LEADERSHIP AND SERVICE

Ivy League Data Analytics Conference

Co-Organizer, 2019 – Present

Brown Data Science Club

President, 2019 – Present

- Lead team of students interested in data science. Organize annual Brown Datathon and events throughout the year to create a campus community in data science.

Marketing Team Leader, 2018 – 2019

- Developed branding of Brown Data Science, including logo, website, t-shirts, and internal and external outreach.

Outreach Team Member, 2017 – 2019

Club Member, 2016 – 2017

Social Committee, Department of Biostatistics and Center for Statistical Sciences

Undergraduate Representative, 2019 – Present

Diversity & Inclusion Committee, Department of Biostatistics and Center for Statistical Sciences

Undergraduate Representative, 2018 – Present

Statistics Departmental Undergraduate Group (DUG)

DUG Leader, Brown University, 2018 – Present

Women in Machine Learning Workshop

Reviewer, 2019

Brown University Admissions

Science Tour Guide, 2017 – 2019

Women in Science and Engineering

Mentor, 2017 – 2019

CONFERENCES AND TRAVEL AWARDS**ASA Women in Statistics and Data Science 2019**

The American Statistical Association, Bellevue, WA, October 2-5, 2019

Travel funded by ASA WSDS Student Travel Award and Brown Data Science Initiative

Disney Data & Analytics Conference (DDAC) 2019

The Walt Disney Company, Orlando, FL, August 20-22, 2019

Statistics and Data Science Conference (SDSCon)

MIT Media Lab, Cambridge, MA, April 5, 2019

News vs. Truth Seminar with Former President of CNN Jon Klein and Steven Sloman

Brown University, Providence, RI, Spring 2019

Collaborate@ICERM 2019: Topological Data Analysis and Music Information Retrieval

ICERM, Providence, RI, January 7-11, 2019

Travel funded by ICERM

Machine Intelligence Conference

MIT Media Lab, Cambridge, MA, November 3, 2018

ISMIR 2018

International Society for Music Information Retrieval, Paris, France, September 23-27, 2018

*Travel funded by **ISMIR Student Travel Grant** and the Brown Data Science Initiative*

Disney Data & Analytics Conference (DDAC) 2018

The Walt Disney Company, Orlando, FL, August 28-29, 2018

*Travel Funded by the **Disney Data & Analytics Women Scholarship***

Women in Data Science (WiDS) 2018

Worcester Polytechnic Institute, Worcester, MA, March 5, 2018

Northeast Music Information Special Interest Group (NEMISIG) 2018

Brown University and Spotify, Providence, RI, January 27, 2018

Joint Mathematics Meetings 2018

The American Mathematical Society and the Mathematical Association of America, San Diego, CA, January 10-13, 2018

*Travel Funded by **JMM Student Travel Grant** and ICERM*

PROFESSIONAL AFFILIATIONS

American Statistical Association, 2018 – Present

Student Member

Alpha Chi Omega, 2017 – Present

Chapter Relations and Standards Board Representative, Class of 2020 Risk Representative

The Brown Daily Herald, 2016 – Present

Copy-editor

COMPUTER SKILLS

Programming: R, Python, MATLAB, SQL, Java, Stata, Javascript, HTML, CSS

Miscellaneous: Git, LaTeX, Qualtrics, Prolific, R Markdown, Jupyter Notebooks