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, AI and data ethics

EDUCATION

Brown University   **Providence, RI**
Sc.B., Statistics (Honors Candidate)   *Expected: May 2020*
A.B., Behavioral Decision Sciences, Specialization in Human and Machine Learning
Overall GPA: 3.95/4.0

RESEARCH EXPERIENCE

Honors Senior Thesis and Senior Capstone   **Brown University**
Advisors: Lorin Crawford, Ph.D. and Matt Nassar, Ph.D.   *Fall 2019 – Present*
- Writing Honors Thesis in Statistics, using reinforcement learning to inform how different personalities learn in various contexts. Senior Capstone in Behavioral Decision Sciences, using reinforcement learning to understand place field remapping in the hippocampus. *Languages*: Python, MATLAB

Sloman Lab Research Assistant   **Brown University**
Advisor: Steven Sloman, Ph.D.   *Fall 2019 – Present*

- The Future of Work: Are Machines Interchangeable With People?
- 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.

Learning, Memory & Decision Lab Research Assistant   **Brown University**
Advisor: Matthew Nassar, Ph.D.   *Spring 2019 – Present*
- Studying reinforcement learning in dynamic environments to understand place field remapping in the hippocampus. Affiliated with Carney Institute for Brain Science. *Languages: MATLAB*

Collaborative Research on Music Information Retrieval   **Brown University**
Advisor: Katherine Kinnaird, Ph.D.   *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   **Brown University**
Advisor: Lorin Crawford, Ph.D.   *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   **ICERM**
Advisor: Katherine Kinnaird, Ph.D. and Jeffrey Brock, Ph.D.   *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. and **Bugbee, E.H.**, "SE and SNL Diagrams: Flexible Data Structures for MIR," Proceedings of 19th ISMIR Conference, Paris, France, 2018.

(Abstract-Reviewed)

> Savard, C., **Bugbee, E.H.**, McGuirl, M.R., and Kinnaird, K.M., "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, 2018.

In Preparation

Bugbee, E.H., Savard, C. , McGuirl, M.R., and Kinnaird, K.M. "SuPP and MaPP: Adaptable Music Representations for Structure-based Approaches to MIR Tasks"

HONORS AND AWARDS

Class of '81 Undergraduate TAship for Women in CS   *February 2019*
- Awarded by the Brown Department of Computer Science.

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   *May 2018*
- Top 5 grades 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   Orlando, FL
The Walt Disney Company   *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   Redmond, WA
Microsoft   *Summer 2018*
- Program Manager and Software Engineer for Microsoft Support Engineering, Universal Store Team, Cloud + AI

TEACHING EXPERIENCE

HEAD TEACHING ASSISTANT

CSCI 0100: Data Fluency for All   *Fall 2019*
Brown Department of Computer Science, Professor: Amy Greenwald, Ph.D.
- An introductory data science course emphasizing data literacy, statistics, machine learning, and data visualization through the R programming language.

UNDERGRADUATE TEACHING ASSISTANT

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.
- Introduction to 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: Roee Gutman, Ph.D.
- Introductory data analysis course using R with applications to biostatistics.

CSCI 0100: Data Fluency for All   *Fall 2017*
Brown Department of Computer Science, Professor: Amy Greenwald, Ph.D.
- As above, an introductory data science course for non-Computer Science or Statistics concentrators.

RESEARCH PRESENTATIONS

TALKS

Research Talk, *"Reinforcement Learning in Gridworld 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 of 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 of 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

Statistics Departmental Undergraduate Group (DUG)
DUG Leader, Brown University, 2018 – Present

Diversity & Inclusion Committee, Department of Biostatistics and Center for Statistical Sciences
Undergraduate Representative, 2018 – Present

Brown Data Science Club
President, 2019 – Present
- Lead students interested in data science. Organize the 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

Ivy League Data Analytics Conference
Co-Organizer, 2019 – 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 of 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