

KATHERINE A. KEITH

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EDUCATION

University of Massachusetts Amherst

Ph.D. in Computer Science (in progress)

M.S. in Computer Science, February 2020

2016–Present

Amherst, MA

Lewis & Clark College

B.A. in Mathematics with departmental honors, summa cum laude

Minor: Chinese

2011–2015

Portland, OR

RESEARCH EXPERIENCE

Graduate Research Assistant

University of Massachusetts, Amherst

September 2016–Present

Amherst, MA

- Natural language processing, machine learning, and computational social science research
- Advisor: Dr. Brendan O'Connor

Undergraduate Research Assistant (Economics)

Lewis & Clark College

May 2014–August 2014

Portland, OR

- Developed an agent-based simulation of intergenerational wealth transfer in medieval England
- Funding: Andrew W. Mellon Collaborative Student-Faculty Research Grant
- Advisor: Dr. Clifford Bekar

PEER-REVIEWED CONFERENCE PUBLICATIONS

1. Text and Causal Inference: A Review of Using Text to Remove Confounding from Causal Estimates. **Katherine A. Keith**, David Jensen, and Brendan O'Connor. In *Proceedings of Annual Meeting of the Association for Computational Linguistics (ACL)*. 2020.
2. Modeling financial analysts' decision making via the pragmatics and semantics of earnings calls. **Katherine A. Keith** and Amanda Stent. In *Proceedings of Annual Meeting of the Association for Computational Linguistics (ACL)*. 2019.
3. Uncertainty-aware generative models for inferring document class prevalence. **Katherine A. Keith** and Brendan O'Connor. In *Proceedings of Empirical Methods in Natural Language Processing (EMNLP)*. 2018.
4. Monte Carlo Syntax Marginals for Exploring and Using Dependency Parses. **Katherine A. Keith**, Su Lin Blodgett, and Brendan O'Connor. In *Proceedings of North American Chapter of the Association for Computational Linguistics (NAACL)*. 2018.
5. Identifying civilians killed by police with distantly supervised entity-event extraction. **Katherine A. Keith**, Abram Handler, Michael Pinkham, Cara Magliozzi, Joshua McDuffie, and Brendan O'Connor. In *Proceedings of Empirical Methods in Natural Language Processing (EMNLP)*. 2017.

INDUSTRY EXPERIENCE

Research Intern

Bloomberg L.P.

Summer 2020

Remote

- Mentor: Dr. Edgar Meij

Research Intern

CTO Data Science Team, Bloomberg L.P.

May–August 2018
New York, New York

- Mentor: Dr. Amanda Stent
- Correlated stock market signals with text of earnings call transcripts

TEACHING EXPERIENCE

Instructor on Record

CS335: Machine Learning

Spring 2020

Mt. Holyoke College

- Sole instructor of the course and responsible for designing and giving lectures, holding office hours, developing problem sets, developing exams, and grading problem sets and exams.

Instructor on Record

CS191: Computer Science First Year Seminar

Fall 2019

University of Massachusetts Amherst

- Co-designed curriculum on “Ethical Issues Surrounding Artificial Intelligence Systems and Big Data”
- Led two weekly discussion sections comprising of 19 students each

Graduate Teaching Assistant

CS685: Advanced Natural Language Processing

Spring 2018

University of Massachusetts Amherst

- Assisted students with course material and homework during weekly office hours
- Graded literature review assignment and in-class presentations
- Helped to design homeworks

Fulbright English Teaching Assistant

August 2015–June 2016

U.S. Department of State

Kinmen, Taiwan

- Taught first through sixth grade ESL courses in a public elementary school
- Facilitated multi-cultural dialogue and programming

Mathematics Tutor

January 2012–May 2015

Lewis & Clark College

Portland, OR

- Tutored Calculus I, Calculus II, and Linear Algebra for private one-on-one and group sessions
- Tutored in the Symbolic and Quantitative Resource Center (SQRC)

GRANTS

- Kaggle Open Data Research Grant 2020 (\$5000). With Andy Halterman and Sheikh Sarwar.

INVITED TALKS

- Williams College’s Computer Science Colloquium—November 15, 2019
- Rutgers University’s Natural Language Processing Group—November 6, 2019
- Lewis & Clark College’s Mathematical Sciences Colloquium—September 24, 2018

GUEST LECTURES

- Mt. Holyoke College, Natural Language Processing—November 13, 2019
- Mt. Holyoke College, Natural Language Processing—October 10, 2019

- University of Massachusetts Amherst, Advanced Natural Language Processing—April 26, 2018

OTHER PROJECTS

- “Fairkit-learn: A multi-objective optimization approach to fairness in machine learning classifiers.” With Sam Witty. *Advanced Software Engineering: Analysis and Evaluation* final class project (Spring 2018)
- “Class-conditional language modeling with LSTMs.” *Machine Learning* final class project (Fall 2017)
- “Linguistically Motivated LSTM Architectures for Relation Extraction.” With Sheshera Mysore. *Neural Networks* final class project (Fall 2017)
- “Temporal, Embedding-Based Soft Deduplication of Police Killing Events.” With Su Lin Blodgett and Aaron Schein. *Database Design & Implementation* final class project (Spring 2017)
- “Probabilistic Modeling of Trending Words on Twitter.” With Su Lin Blodgett. *Statistical Machine Learning* final class project (Fall 2016)
- “Machine Learning Classification of Job Loss Twitter Messages.” With Boya Ren. *Introduction to Natural Language Processing* final class project (Fall 2016)
- “Extending the Pontryagin Maximum Principle of Optimal Control Theory for Inequality Constraints and Discounting.” *Lewis & Clark College Mathematics Department Senior Honors Thesis* (Spring 2015)
- “An Agent-Based Simulation of Intergenerational Mobility Amongst the English Medieval Peasantry.” *Andrew W. Mellon Student-Faculty Research Project* (Summer 2014)

SERVICE & OUTREACH

Reviewer

- EMNLP, 2020
- ACL, 2020
- ICWSM, 2019, 2020
- NAACL, 2019

Co-chair, CSWomen

February 2019–January 2020

University of Massachusetts Amherst Computer Science Women’s Group

Student Volunteer, Women in Engineering and Computing Career Day

October 28, 2019

University of Massachusetts Amherst

Social Co-Chair, CSWomen

January 2017–January 2019

University of Massachusetts Amherst Computer Science Women’s Group

“What is computer Science?” 7th Grade Guest Lecture

Jan. 3, 2018 and Jan. 7, 2019

Chief Joseph Middle School, Bozeman, Montana

Organizer, CICS Graduate Male Ally Workshop Series

2017–2018

University of Massachusetts Amherst

<https://github.com/mrlucasch/cics-male-allyship-workshops>

Student Volunteer, Girls Inc. Eureka! Summer Workshop

August 1 & 3, 2017

University of Massachusetts Amherst

Student Volunteer, Women in Engineering and Computing Career Day

October 24, 2016

University of Massachusetts Amherst

MENTEES

- Sirius Just (Undergraduate Honors Thesis, 2019-2020; REU, Summer 2019)
- Tamas Palfi (REU, Summer 2019)
- Hieu Phan (REU, Summer 2019)
- Aaron Mueller (REU, Summer 2017)

GRADUATE AWARDS & HONORS

- Awarded *distinction* for candidacy portfolio submitted to the College of Information and Computer Sciences at University of Massachusetts Amherst (December 2019)
- Bloomberg Data Science Ph.D. Fellowship (awarded May 2019)
- Computing Research Association of Women (CRAW) Graduate Cohort (2017, 2018)
- Empirical Methods in Natural Language Processing (EMNLP) Student Travel Scholarship (2017)
- Paul Utgoff Memorial Graduate Scholarship in Machine Learning (2016)

UNDERGRADUATE AWARDS & HONORS

- Fulbright ETA Grantee with the U.S. Department of State (2015–16)
- Rhodes Scholarship Finalist (2015)
- Marshall Scholarship Finalist (2015)
- Rena Ratte Award, Lewis & Clark College (2015)– “*This is the highest academic award given at Lewis & Clark and is given annually to one undergraduate of senior standing whose abilities and commitment have combined to produce work which is consistently of the greatest distinction.*” https://college.lclark.edu/academics/honors/college_awards/
- Robert B. Pamplin Jr. Society Fellow, Lewis & Clark College (2012–2015)
- Dean’s List, Lewis & Clark College (2011–2015)
- Project Pengyou National Leadership Fellow (2014)
- Phi Beta Kappa Member (2014–2015)
- Pi Mu Epsilon Member (2014–2015)
- Barbara Hirschi Neely Four-Year Full-Tuition Scholarship Recipient, Lewis & Clark College (2011–2015)
- NCAA Division III Cross-Country All-Academic (2012)
- Lewis & Clark Cross-Country Four-Year Varsity Letter Winner (2011–2015)

FOREIGN LANGUAGES

Chinese (Mandarin)

HSK Level 4 (tested April 16, 2016)

CET Beijing: 16-week language-intensive immersion program (Spring 2014)