

# KATHERINE A. KEITH

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## EDUCATION

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### University of Massachusetts Amherst

M.S. / Ph.D. in Computer Science (in progress)

GPA 3.88/4.0

2016–Present

Amherst, MA

### Lewis & Clark College

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

Minor: Chinese

GPA 3.95/4.0

2011–2015

Portland, OR

## RESEARCH EXPERIENCE

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### 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

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

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1. 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.
2. 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.
3. 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

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### 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

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**Instructor, First-year seminar**

Fall 2019

*University of Massachusetts Amherst*

- Co-designed curriculum on “Ethical Issues Surrounding Artificial Intelligence Systems and Big Data”  
<https://github.com/sblodgett/ai-ethics>
- 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)

**OTHER PROJECTS**

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- “Fairkit-learn: A multi-objective optimization approach to fairness in machine learning classifiers.” *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.” *Neural Networks* final class project (Fall 2017)
- “Temporal, Embedding-Based Soft Deduplication of Police Killing Events.” *Database Design & Implementation* final class project (Spring 2017)
- “Probabilistic Modeling of Trending Words on Twitter.” *Statistical Machine Learning* final class project (Fall 2016)
- “Machine Learning Classification of Job Loss Twitter Messages.” *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)

**SELECTED COURSES**

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Machine Learning, Neural Networks, Probabilistic Graphical Models, Advanced Algorithms and Analysis, Advanced Software Engineering: Analysis and Evaluation, Database Design & Implementation, Introduction to Natural Language Processing, Advanced Probability & Statistics, Real Analysis, Abstract Algebra, Game Theory, Numerical Analysis, Differential Equations, Linear Algebra

## SERVICE & OUTREACH

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### Reviewer

- ICWSM, 2019
- NAACL, 2019

### Co-chair, CSWomen

February 2019–Present

*University of Massachusetts Amherst Computer Science Women's Group*

### Social Co-Chair, CSWomen

January 2017–January 2019

*University of Massachusetts Amherst Computer Science Women's Group*

### Organizer, CICS 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*

### Mentor, Research Experience for Undergraduates (REU)

Summer 2017

*University of Massachusetts Amherst, College of Information and Computer Science*

### Student Volunteer, Women in Engineering and Computing Career Day

October 24, 2016

*University of Massachusetts Amherst*

## TECHNICAL STRENGTHS

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Python (scipy, scikit-learn, numpy, pandas), Pytorch, R, SQL

## FOREIGN LANGUAGES

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### Chinese (Mandarin)

HSK Level 4 (tested April 16, 2016)

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

## AWARDS & HONORS

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- 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)
- 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)
- 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)