

# KATHERINE A. KEITH

kkeith@cs.umass.edu

## EDUCATION

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**University of Massachusetts Amherst** 2016–Present  
M.S. / Ph.D. in Computer Science (in progress) *Amherst, MA*

**Lewis & Clark College** 2011–2015  
B.A. in Mathematics (with departmental honors) *Portland, OR*  
Minor: Chinese  
Summa cum laude, 3.95 GPA

## RESEARCH EXPERIENCE

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**Graduate Research Assistant** September 2016–Present  
*University of Massachusetts, Amherst* *Amherst, MA*

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

**Undergraduate Research Assistant** May 2014–August 2014  
*Lewis & Clark College* *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 PUBLICATIONS

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Monte Carlo Syntax Marginals for Exploring and Using Dependency Parses. **Katherine A. Keith**, Su Lin Blodgett, and Brendan O'Connor. *Proceedings of North American Chapter of the Association for Computational Linguistics (NAACL)*. 2018.

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.

## TEACHING EXPERIENCE

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**Graduate Teaching Assistant: CS685 Advanced Natural Language Processing** Spring 2018  
*University of Massachusetts Amherst*

- Assisted students with homework and conceptual questions 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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Advanced Software Engineering: Analysis and Evaluation, Machine Learning, Neural Networks, Probabilistic Graphical Models, Database Design & Implementation, Statistical Machine Learning, 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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| <b>Organizer, CICS Male Ally Workshop Series</b>  | 2017–2018             |
| <i>University of Massachusetts Amherst</i>  |                       |
| <a href="https://github.com/mrlucasch/cics-male-allyship-workshops">https://github.com/mrlucasch/cics-male-allyship-workshops</a> |                       |
| <b>Student Volunteer, Girls Inc. Eureka! Summer Workshop</b>  | August 1 & 3, 2017    |
| <i>University of Massachusetts Amherst</i>  |                       |
| <b>Mentor, Research Experience for Undergraduates (REU)</b>   | Summer 2017           |
| <i>University of Massachusetts Amherst, College of Information and Computer Science</i>   |                       |
| <b>Social Co-Chair, Computer Science Women’s Group</b>  | January 2016–May 2018 |
| <i>University of Massachusetts Amherst Computer Science Women’s Group</i>   |                       |
| <b>Student Volunteer, Women in Engineering and Computing Career Day</b>   | October 24, 2016      |
| <i>University of Massachusetts Amherst</i>  |                       |

## TECHNICAL STRENGTHS

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<b>Primary programming language</b>	Python
<b>Deep learning library</b>	Pytorch
<b>Python modules</b>	scipy, scikit-learn, numpy, pandas

## 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)