

# KATHERINE A. KEITH

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## EDUCATION

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**University of Massachusetts Amherst**  
Ph.D. in Computer Science, September 2021  
M.S. in Computer Science, February 2020

2016–2021  
*Amherst, MA*

**Lewis & Clark College**  
B.A. in Mathematics with departmental honors, summa cum laude  
Minor: Chinese Language

2011–2015  
*Portland, OR*

## APPOINTMENTS

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**Assistant Professor**  
Department of Computer Science  
Williams College

2022–Present  
*Williamstown, MA*

## RESEARCH EXPERIENCE

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**Postdoctoral Young Investigator**  
*Allen Institute for Artificial Intelligence*

September 2021–June 2022  
*Seattle, WA*

- Research with the Semantic Scholar team

**Graduate Research Assistant**  
*University of Massachusetts, Amherst*

September 2016–August, 2021  
*Amherst, MA*

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

**Research Intern**  
*AI Discovery Team, Bloomberg*

June–August 2020  
*Remote (London, UK team)*

- Mentors: Dr. Edgar Meij, Dr. Christoph Teichmann
- Resulted in publication at the *Workshop on Natural Language Processing and Computational Social Science (NLP+CSS) at EMNLP, 2020*.

**Research Intern**  
*CTO Data Science Team, Bloomberg*

May–August 2018  
*New York, New York*

- Mentor: Dr. Amanda Stent
- Resulted in publication at the *Association of Computational Linguistics (ACL), 2019*.

## PUBLICATIONS: JOURNALS

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1. **Causal Inference in Natural Language Processing: Estimation, Prediction, Interpretation and Beyond.** Amir Feder, **Katherine A. Keith**, Emaad Manzoor, Reid Pryzant, Dhanya Sridhar, Zach Wood-Doughty, Jacob Eisenstein, Justin Grimmer, Roi Reichart, Margaret E. Roberts, Brandon M. Stewart, Victor Veitch, Diyi Yang. *Transactions of the Association for Computational Linguistics (TACL)*. 2022.

## PUBLICATIONS: CONFERENCE PROCEEDINGS

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8. **Paying Attention to the Algorithm Behind the Curtain: Bringing Transparency to YouTube's Demonetization Algorithms.** Arun Dunna, **Katherine A. Keith**, Ethan Zuckerman, Narseo Vallina-Rodriguez, Brendan O'Connor, Rishab Nithyanand. In *ACM Conference On Computer-Supported Cooperative Work And Social Computing (CSCW)*. 2022.
7. Corpus-Level Evaluation for Event QA: The IndiaPoliceEvents Corpus Covering the 2002 Gujarat Violence. Andrew Halterman\*, **Katherine A. Keith**\*, Sheikh Muhammad Sarwar\*, and Brendan O'Connor (\* indicates joint first-authors). In *Findings of the Association for Computational Linguistics (ACL-IJCNLP)*. 2021.
6. Uncertainty over Uncertainty: Investigating the Assumptions, Annotations, and Text Measurements of Economic Policy Uncertainty. **Katherine A. Keith**, Christoph Teichmann, Brendan O'Connor, and Edgar Meij. In *Proceedings of the Fourth Workshop on Natural Language Processing and Computational Social Science (NLP+CSS) at EMNLP*. 2020.
5. 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.
4. 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.
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.
1. 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.

## PUBLICATIONS: WORKSHOP PROCEEDINGS

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1. Text as Causal Mediators: Research Design for Causal Estimates of Differential Treatment of Social Groups via Language Aspects. **Katherine A. Keith**, Douglas Rice, and Brendan O'Connor. In *Proceedings of the First Workshop on Causal Inference and Natural Language Processing (CI+NLP) at EMNLP*. 2021.

## TEACHING EXPERIENCE

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### Instructor

- **CSCI 104: Understanding Data Through Computation** (Williams College, Fall 2022)
- CS335: Machine Learning (Mount Holyoke College, Spring 2020)
- CS191: Ethical Issues Surrounding Artificial Intelligence Systems and Big Data, First Year Seminar (University of Massachusetts Amherst, Fall 2019)

### Graduate Teaching Assistant

- CS685: Advanced Natural Language Processing (University of Massachusetts Amherst, Spring 2018)

### Fulbright English Teaching Assistant

U.S. Department of State

August 2015–June 2016

Kinmen, Taiwan

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

## GRANTS

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- Young Investigator Grant from the Allen Institute of Artificial Intelligence (\$100,000). November 2022.
- Social Science Research Council (SSRC)/Summer Institutes in Computational Social Science (SICSS) Research Grant 2021 (\$1,200). With Ian Stewart.
- Kaggle Open Data Research Grant 2020 (\$5,000). With Andy Halterman and Sheikh Sarwar.

## INVITED TALKS

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- Williams College's Statistics Colloquium—October 19, 2022.
- 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

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- Georgia Institute of Technology, CS-6471: Computational Social Science, "Text and Causal Estimation: Text as Causal Confounders and Mediators"—March 28, 2022
- University of Massachusetts Amherst, Natural Language Processing—November 13, 2020
- Mount Holyoke College, Natural Language Processing—November 13, 2019
- Mount Holyoke College, Natural Language Processing—October 10, 2018
- University of Massachusetts Amherst, Advanced Natural Language Processing—April 26, 2018

## TUTORIALS

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- Aggregated Classification Pipelines: Propagating Probabilistic Assumptions from Start to Finish. NLP+CSS 201 Online Tutorial Series. March 30, 2022.

## SERVICE & OUTREACH

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### Service Leadership Roles

- Co-organizer, *NLP+CSS* workshop at EMNLP. December 7, 2022.
- Co-organizer, *CS+NLP 201: Beyond the Basics* online tutorial series (Fall 2021)
- Co-organizer and Panel Moderator, *First Workshop on Causal Inference and Natural Language Processing* at EMNLP 2021

### Reviewer / Referee / Program Committee

- *TADA*: 2022
- *Journal of Data Science*: February, 2022
- *Science Advances*: October, 2021
- *Workshop of Teaching NLP*: 2021
- *ACL*: 2020, 2021
- *NAACL*: 2019, 2021
- *EACL*: 2021
- *CoNLL*: 2020

- *EMNLP*: 2020
- *ICWSM*: 2019, 2020

### Other Outreach Roles

- Panelist, University of Massachusetts CSWomen panel on “Applying to Research Internships and Jobs” (November 19, 2021)
- Panelist, NSF CSGrad4US Mentoring Program panel on “What I wish I knew when I started graduate school” (November 24, 2021)
- PhD Applicant Support Mentor for Underrepresented Students (November 2020) University of Massachusetts Amherst
- Panelist, CS Graduate School Q&A Panel (May 1, 2020) Cape Cod Community College
- Co-chair, CSWomen (February 2019–January 2020) 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
- Student Volunteer, Women in Engineering and Computing Career Day (October 28, 2019) University of Massachusetts Amherst
- “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 (September 2017– May 2018) University of Massachusetts Amherst
- 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

## GRADUATE AWARDS & HONORS

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- Outstanding Reviewer, EMNLP 2020
- Awarded *distinction* for Ph.D. 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 (CRA-W) 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

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- Fulbright ETA Grantee with the U.S. Department of State (2015–16)
- Rhodes Scholarship Finalist (2015)
- Marshall Scholarship Finalist (2015)
- Rena J. Ratte Memorial 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.”*
- NCAA Division III Cross-Country All-Academic (2012)
- Lewis & Clark College Cross-Country Four-Year Varsity Letter Winner (2011–2015)

## FOREIGN LANGUAGES

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### **Chinese (Mandarin)**

HSK Level 4 (test passed April 16, 2016)

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