

# Lu He

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PhD Candidate  
Department of Informatics  
University of California, Irvine

## RESEARCH INTERESTS

Substantive: Health informatics, human-computer interaction, social media mining, health communication, computer-supported cooperative work (CSCW)

Methodological: Natural language processing, applied machine learning & deep learning, social network analysis, statistical analysis

## EDUCATION

2017-        **University of California, Irvine**  
2023        Ph.D. in Informatics  
              Advisor: Kai Zheng, Ph.D.

2013-        **University of Minnesota, Twin Cities**  
2017        Bachelor of Science with Distinction in Computer Science

## PUBLICATION

### Peer-reviewed Journals

- [J8]        **He L**, Yin T, Zheng K. They May not Work! An Evaluation of Eleven Sentiment Analysis Tools on Seven Social Media Datasets. Accepted to Journal of Biomedical Informatics (JBI) (Forthcoming, 2022)
- [J7]        **He L**, He C. Help Me #DebunkThis: Unpacking Individual and Community's Collaborative Work in Information Credibility Assessment. Accepted to CSCW 2022, forthcoming
- [J6]        Su Z, **He L**, Jariwala SP, Zheng K, Chen Y. "What is your envisioned future?": towards human-AI enrichment in data work of asthma care. Proceedings of the ACM on Human-Computer Interaction, CSCW (2022, forthcoming)
- [J5]        He C, Liu H, **He L**, Lu T, Li B. More Collaboration, Less Seriousness: Investigating New Strategies for Promoting Youth Engagement in Government-Generated Videos during the COVID-19 Pandemic in China. Accepted to Computers in Human Behavior, 2021. DOI: <https://doi.org/10.1016/j.chb.2021.107019>

- [J4] He C, **He L**, Lu T, Li B. Beyond Entertainment: Unpacking Danmaku and Comments' Role of Information Sharing and Sentiment Expression in Online Crisis Videos. Proceedings of the ACM on Human-Computer Interaction Volume 5, CSCW (October 2021), 27 pages. DOI: <https://dl.acm.org/doi/abs/10.1145/3479555>
- [J3] **He L\***, He C\*, Reynolds TL, Bai Q, Huang Y, Li C, Zheng K, Chen Y. Why Do People Oppose Mask Wearing? A Comprehensive Analysis of US Tweets During the COVID-19 Pandemic. J Am Med Inform Assoc. 2021. (\* equal contribution) PMID: [33690794](https://pubmed.ncbi.nlm.nih.gov/33690794/)

### **Editor's Choice & Featured**

- [J2] **He L**, Yin T, Hu Z, Chen Y, Hanauer DA, Zheng K. Developing a Standardized Protocol for Computational Sentiment Analysis Research Using Health-Related Social Media Data. J Am Med Inform Assoc. 2021;28(6):1125–34. PMID: [33355353](https://pubmed.ncbi.nlm.nih.gov/33355353/)
- [J1] Ma H, Smith C.E, **He L**, Narayanan S, Giaquinto R.A, Evans R, Hanson L, Yarosh S. Write for Life: Persisting in Online Health Communities through Expressive Writing and Social Support. Proceedings of the ACM on Human-Computer Interaction Volume 1, CSCW (November 2017), 24 pages. DOI:<https://doi.org/10.1145/3134708>

### **Peer-reviewed Conference Proceedings**

- [C8] Guo Y, Zhu J, Huang Y, **He L**, He C, Li C, Zheng K. Public opinions toward COVID-19 vaccine mandates: a machine learning-based analysis of U.S. tweets. AMIA Annu Symp Proc. 2022. (in press)
- [C7] **He L\***, Song T\*, Jiang Y, Yu P, Gong Y. To Improve Supportive Care for Patients Taking Oral Anticancer Agents. Proceedings of the 2021 World Congress on Health and Biomedical Informatic (MEDINFO 2021) (\* equal contribution)
- [C6] **He L**, He C, Wang Y, Hu Z, Zheng K, Chen Y. What Do Patients Care About? Mining Fine-grained Patient Concerns from Online Physician Reviews Through Computer-Assisted Multi-level Qualitative Analysis. AMIA Annu Symp Proc. 2020;544–53. PMID: [33936428](https://pubmed.ncbi.nlm.nih.gov/33936428/)

### **Student Paper Competition Finalist**

- [C5] **He L**, Zheng K. How do general-purpose sentiment analyzers perform when applied to health-related online social media data? Proceedings of the 2019 World Congress on Health and Biomedical Informatics (MEDINFO 2019).

### **Student Best Paper Nomination**

- [C4] Shehada ER, **He L**, Eikey EV, Jen M, Wong A, Young S, Zheng K. Characterizing frequent flyers of an emergency department using

cluster analysis. In: Proceedings of the 2019 World Congress on Health and Biomedical Informatics (MEDINFO 2019).

- [C3] Chi C, **He L**, Ravvaz K, Weissert J, P. Tonellato. Optimized Decision Support Rules of Precision Warfarin Treatment. 2018 Pacific Symposium on Biocomputing (PSB 2018).
- [C2] Fan Y, **He L**, Zhang R. Evaluating Automatic Methods to Extract Patients' Supplement Use From Clinical Reports. IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2017).
- [C1] Fan Y, **He L**, Pakhomov S, Melton G, Zhang R. Classifying Supplement Use Status in Clinical Notes. 2017 American Medical Informatics Association Joint Summits (AMIA 2017).

### **2nd Place in Student Paper Competition**

#### **Extended abstracts, workshops, and posters**

- [A4] Griffin A, **He L**, Sunjaya A, King A, Khan Z, Douthit B, Nwadiugw M, Subbin, V, Braunstein M, Nguyen V, Jaffe C, Schleyer T. Assessment of Real-World Health Applications on FHIR. Poster accepted to AMIA Annu Symp Proc. 2022. To Appear.
- [A3] **He L**, Cheng Y, Zhou T, Xian Y. Investigating the Narratives of Anti-Asian Hate Speech on Twitter During the COVID-19 Pandemic. Podium Abstract, AMIA Annu Symp Proc. 2021
- [A2] Goyal J, Ng DQ, Maddhuri J, Kumar AS, Jia S, **He L**, Wisseh C, Nguyen M, Lee J, McBane S, Zheng K, Hurley-Kim K, Nguyen Lee, Chan A, Cadiz CL. Predicting adverse drug events using the All of Us cohort data: A feasibility study. In: Proceedings of the 2021 American College of Clinical Pharmacy Annual Meeting. (ACCP 2021)
- [A1] Yin T, **He L**. Challenges of applying sentiment analysis on health-related social media data. Southern California Natural Language Processing Symposium (SoCal 2019)

### **Best Poster Award**

#### **MANUSCRIPTS IN-PROGRESS**

- [P1] Ye J\*, **He L\***, Beestrum M. Implications For Implementation and Adoption of Telehealth in Low-and-Middle Income Countries During the COVID-19 Pandemic: Systematic Review of China's Practices and Experiences. *Major Revision (\* indicates equal contribution)*
- [P3] Griffin A, **He L**, Sunjaya A, King A, Khan Z, Douthit B, Nwadiugw M, Subbin, V, Braunstein M, Nguyen V, Jaffe C, Schleyer T. Assessment of Real-World Health Applications on FHIR. *Major Revision*

**EXPERIENCES (SELECTED)****2022 Graduate Research Assistant**

-present Advisor: Helen Ma, MD, Kai Zheng, Ph.D.

Project: To use NLP methods to extract environmental factors from clinical notes and assist predictive modeling of patient outcomes among a Veteran population.

**2021 AMIA Workgroup Volunteer**

-present Advisor: Titus Schleyer, DMD, Ph.D.

Project: To conduct a comprehensive survey of the landscape of Fast Healthcare Interoperability Resources (FHIR) implementations. [P3, A4]

**2020 Graduate Research Assistant**

-present Advisors: Caryn Bradley, PT, Ph.D., William Tang, Ph.D., Kai Zheng, Ph.D., Anton Palma, Ph.D.

Project: Working closely with researchers and practitioners in physical therapy, biomedical engineering, and biostatistics, I combine their medical knowledge to develop clinical algorithms to predict days to discharge for infants in Neonatal Intensive Care Unit (NICU) based on their feeding performance.

**2017 Graduate Research Assistant**

-present Department of Informatics, University of California, Irvine

Advisors: Kai Zheng, Ph.D., Yunan Chen, Ph.D.

Project 1: Conducted a systematic literature review on the use of computational tools for healthcare social media studies. Empirically evaluated the validity of tools. [C5, A1, J2, J8]

Project 2: Characterized emergency department frequent attenders using cluster analysis. [C4]

Project 3: Developing computer-assisted qualitative analysis pipeline to extract useful information from free-text data. [C6]

Project 4: Analyzing public responses on social media to the COVID-19 pandemic. [J3, A3, C8]

**2018.6-9 Bioinformatics Programmer**

Bakar Computational Health Sciences Institute (BCHSI),

University of California, San Francisco

Advisor: Gundolf Schenk, Ph.D.

Project: Developed test units for a program to identify Protected Health Information (PHI) in clinical notes. Improved the performance of the program to be able to run on 60 million notes.

## **GRANT ACTIVITIES**

2022-2023 UCI-Internal (Ma, Zheng)

UCI ICTS/VA Long Beach Informatics Pilot Award, \$50,000

Outcomes from the National Database of Lymphoid Malignancies in US Veterans Using Data from the Veterans Health Administration, the Largest Integrated Healthcare System.

Role: Grant writing and research assistance

2022-2023 NSF (Bradley, Tang)

STTR Phase 1, \$255,990

Role: Research assistance

2018 UCI-Internal (Zheng)

Academic Senate Council on Research, Computing and Libraries (CORCL), \$3,500

Developing a domain-specific sentiment analyzer for studying health-related social media data

Role: Grant writing and research assistance

## **FELLOWSHIPS, HONORS & AWARDS**

2022 Graduate Dean's Dissertation Fellowship, UC Irvine

2021 Editor's Choice of Journal of American Medical Informatics Association (JAMIA) [J3]

2020 Student Paper Competition Finalist, American Medical Informatics Association Annual Symposium (AMIA 2020) [C6]

2019 Best Poster Award (1/40), Southern California Natural Language Processing Symposium (SoCal 2019) [W1]

2019 Student Best Paper Nomination, 2019 World Congress on Health and Biomedical Informatics (MedInfo '19) [C2]

2018 CRA-W Grad Cohort Workshop, Computing Research Association

2017 Graduate Dean Recruitment Fellowship, Department of Informatics, UC Irvine

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| 2017 | Dean's Award, Department of Informatics, UC Irvine   |
| 2017 | 2nd Place in Student Paper Competition, 2017 American Medical Informatics Association Joint Summits (AMIA 2017) [C1] |
| 2014 | Undergraduate Special Recognition, Department of German, Nordic, Slavic and Dutch, University of Minnesota           |
| 2013 | Maroon Global Excellence Scholarship (four-year), University of Minnesota  |
| 2013 | Dean's List (three-year), University of Minnesota  |

## **TEACHING**

### **Instructor of Record**

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|------|-----------------------------------|
| 2022 | ICS 33 (Intermediate Programming) |
|      | Enrollment: 46 students           |

### **Teaching assistant**

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| 2018 | IN4MTX 151 (Project Management)                            |
| 2017 | CSci 1913 (Introduction to Algorithms and Data Structures) |

## **SKILLS**

### **Research methods**

#### Qualitative

Interview, observational study, user study, grounded theory, wizard-of-oz

#### Quantitative

Survey, applied machine learning & deep learning, natural language processing, log analysis, social network analysis, statistical analysis, linear models, generalized linear models, longitudinal data analysis, linear mixed effect models

### **Programming languages**

Python (proficient), R (medium), Matlab (medium), Java (medium), C/C++ (medium), SQL (medium), Lisp (familiar), Clojure (familiar), Go (familiar), Ruby (familiar)

### **Frameworks and packages**

Python (scikit-learn, Numpy, Pandas, NLTK, Spacy, Gensim, Keras, PyTorch, Django, Tensorflow), R (ggplot, tidyverse, tidytext, dplyr, cluster, mltools, sna, igraph)

### **Databases**

MySQL, PostgreSQL

**Misc.**

LaTex, Github, Jupyter Notebook, Amazon Web Services

**Languages**

Mandarin Chinese (Native), English (Full professional proficiency), Japanese (JLPT N3), German (Limited proficiency)

**SERVICES****Journal Editing**

JAMIA Student Editorial Board Member (2022-2023)

**Program Chair**

Conferences

ICHI 2022 : 10th IEEE International Conference on Healthcare Informatics

**Reviewer**

Conferences

AMIA Annual Symposium (2018-2022), AMIA Informatics Joint Summit (2019), CHI Late Breaking Work (2020), The Pacific Asia Conference on Information Systems (2021), CHI (2022)

**Journals**

Journal of American Medical Informatics Association (2022-2023), Journal of Medical Internet Research (2019-2020), BMC Medical Informatics and Decision Making (2020-2021), Journal of Healthcare Informatics Research (2020-2021), Journal of Biomedical Informatics (2021-2022), IEEE Access (2022)

**Volunteer**

AMIA Symposium Student Volunteer (2017, 2021), AMIA Year-in-Review Student Working Group Volunteer (2020), Women in Academia Reading Group Organizer (2020)

**TALKS & PRESENTATIONS****Invited Talks**

2019.4.8      “Characterizing Frequent Attenders of Emergency Department Using Cluster Analysis”

*Medical Intelligence and Innovation Institute (MI3), Children Hospital of Orange County (CHOC)*

**Guest Lectures**

- 2021.11.29 “Computational Analysis of Social Media Data for Health Research: Applications, Challenges, and Opportunities”  
*Center for Digital Health and Analytics, University of Texas Health School of Biomedical Informatics (Host: Dr. Yang Gong)*
- 2021.10.21 “Computational Analysis of Social Media Data for Health Research: Applications, Challenges, and Opportunities”  
*Center for Digital Health and Analytics, University of Texas Health School of Biomedical Informatics (Host: Dr. Sahiti Myneni)*

**Conference Presentations**

- 2021.11.3 Investigating the Narratives of Anti-Asian Hate Speech on Twitter During the COVID-19 Pandemic”  
*AMIA Annual Symposium 2021, San Diego, California*
- 2020.11.16 “What Do Patients Care About? Mining Fine-grained Patient Concerns from Online Physician Reviews Through Computer-Assisted Multi-level Qualitative Analysis”  
*AMIA Annual Symposium 2020, Virtual Event (Recorded, Co-present with Changyang He)*
- 2020.11.15 “What Do Patients Care About? Mining Fine-grained Patient Concerns from Online Physician Reviews Through Computer-Assisted Multi-level Qualitative Analysis”  
*AMIA Annual Symposium 2020, Student Paper Competition (Virtual Live Presentation)*
- 2019.8.25 “Characterizing Frequent Attenders of Emergency Department Using Cluster Analysis”  
*MedInfo 2019, Lyon, France*
- 2019.8.23 “How Do General-purpose Sentiment Analyzers Perform on Health-related Social Media Data?”  
*MedInfo 2019, Lyon, France*

**MEDIA COVERAGE**

- 2021.12 KXAN News: [Do face masks work? Here are 49 scientific studies that explain why they do](#)



2021.8      Women in AMIA: Episode 20 - [AMIA as a Catalyst for Collaboration](#)

**MENTORING**

Tasmima Khan (Undergraduate, UCI, 2021.4-2021.11)

Tingjue Yin (Undergraduate, UCI, 2019.3-2020.6) [A1, J2, J8]

Peilin Gan (Undergraduate, UCI, 2020.1-2020.12)

Xinchen Zhang (Undergraduate, UCI, 2020.1-2020.6)

Tianyang Zhou (Undergraduate, UCI, 2020.3-2020.6) [A3]

Ya Cheng (Undergraduate, UCI, 2020.3-2020.6) [A3]

Yongxu Xian (Undergraduate, UCI, 2020.3-2020.6) [A3]

Daniel Davies (Undergraduate, UCI, 2019.1-2019.6)

Su In Lee (Undergraduate, I-SURF Program, 2019.6-2019.12)

Yiji Bae (Undergraduate, I-SURF Program, 2019.6-2019.12)

Joohee Kwon (Undergraduate, I-SURF Program, 2019.6-2019.12)

Haotian Hu (Undergraduate, UCI, 2019.10-2019.12)

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