Lu He

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Ph.D. Candidate
Department of Informatics
University of California, Irvine

RESEARCH INTERESTS

<u>Substantive</u>: Human-computer interaction, health informatics, social media mining, health communication, computer-supported cooperative work (CSCW)

<u>Methodological</u>: Natural language processing, applied machine learning & deep learning, social network analysis, statistical analysis

EDUCATION

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

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

PUBLICATION

Peer-reviewed Journals

[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. 2020. (forthcoming)

[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. Proc. ACM Hum.-Comput. Interact. 1, CSCW, Article 73 (November 2017), 24 pages. DOI:https://doi.org/10.1145/3134708

Peer-reviewed Conference Proceedings

[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. (forthcoming) **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

[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**

Working Papers (Manuscript Available Upon Request)

[WP1]   **He L**, Zhao J, He C. Examining and Rethinking the Digital Divide in Consumer Health Information Technologies During the COVID-19 Pandemic.

[WP2]   **He L***, He C*, Reynolds LT, Huang Y, Bai Q, Li C, Zheng K, Chen Y. Why Do People Oppose Mask Wearing? A Comprehensive Analysis of US Tweets During the COVID-19 Pandemic. (* equal contribution)

EXPERIENCES

2020 -present	**Graduate Research Assistant**
	Advisor: Kai Zheng, Ph.D.

Project: To facilitate the use of Electronic Health Records (EHR) and clinical notes for research, I work with the team at UCI to (1) test and deploy a de-identification tool to remove Protected Health Information (PHI) from clinical notes; and (2) evaluate and test a tool to generate synthetic EHR data using differential privacy on real EHR data.

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.

2020   **AMIA Student Working Group Volunteer**

-present   Advisors: Katherine Kim, Ph.D., Spyros Kitsiou, Ph.D.

Project: Conducting a systematic literature review on the implementation, adoption, and user experience of technologies for home-dwelling older adults.

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, W1, J2]

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

Project 3: Developing mixed-method approaches to extract useful information from online physician reviews. [C6]

Project 4: Analyzing public responses on social media to the COVID-19 pandemic.

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.

2016-2017   **Undergraduate Research Assistant**

Department of Computer Science, University of Minnesota

Advisor: Svetlana Yarosh, Ph.D.

Project: Conducted sentiment analysis on health journals from an online health community. [J1]

2016-2017   **Undergraduate Research Assistant**

Institute for Health Informatics, University of Minnesota

Advisor: Rui Zhang, Ph.D.

Project: Developed rule-based and machine learning models to extract supplement use status from clinical notes. [C1, C2]

2016-2017   **Undergraduate Research Assistant**

Advisor: Chil-Lin Chi, Ph.D.

Project: Developed decision tree models for personalized warfarin treatments. [C3]

FELLOWSHIPS, HONORS & AWARDS

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

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

2018   IN4MTX 151 (Project Management)

2017   CSci 1913 (Introduction to Algorithms and Data Structures)

SKILLS

Research methods

Qualitative

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

Quantitative

Applied machine learning & deep learning, natural language processing, social network analysis, statistical analysis, linear models, generalized linear 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

Reviewer

AMIA Annual Symposium (2018-2020), AMIA Informatics Joint Summit (2019), CHI Late Breaking Work (2020), Journal of Medical Internet Research (2019-2020), BMC Medical Informatics and Decision Making (2020), Journal of Healthcare Informatics Research (2020)

Volunteer

AMIA Symposium Student Volunteer (2017), 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)

Conference Presentations

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 Chanyang 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

MENTORING

Tingjue Yin (Undergraduate, UCI, 2019.3-2020.6) [W1, J2]

Peilin Gan (Undergraduate, UCI, 2020.1-present)

Xinchen Zhang (Undergraduate, UCI, 2020.1-2020.6)

Tianyang Zhou (Undergraduate, UCI, 2020.3-2020.6)

Ya Cheng (Undergraduate, UCI, 2020.3-2020.6)

Yongxu Xian (Undergraduate, UCI, 2020.3-2020.6)

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)

Last Update: December 2020