

Zheng Zhang

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EDUCATION

Ph.D. in Computer Science

Starting Jan. 2022

University of Notre Dame, Notre Dame, IN

- Focus: Human-AI collaboration
- Advisor: Toby Jia-jun Li

M.S. in Computer Science

2021

University of Rochester, Rochester, NY

- Track: AI/HCI
- Advisor: Zhen Bai

M.S. in Computer Science

2019

University of Minnesota, Minneapolis, MN

- Track: Human-Computer Interaction
- Advisor: Haiyi Zhu

B.Eng. in Software Engineering

2017

Shaanxi Normal University, Xi'an, China

- Honor: SNNU 2017 Graduation Ceremony Valedictorian
- Rank: 1/87

PUBLICATION

Zheng Zhang, Yapeng Tian, Zheng Ning, Chenliang Xu, Toby Jia-Jun Li. *PEANUT: An Intelligent Human-AI Collaborative Tool for Annotating Audio-Visual Data*. **In submission to UI'22**

Zheng Zhang, Ying Xu, Yanhao Wang, Bingsheng Yao, Daniel Ritchie, Tongshuang Wu, Mo Yu, Dakuo Wang, Toby Jia-Jun Li. *StoryBuddy: A Human-AI Collaborative Agent for Parent-Child Interactive Storytelling with Flexible Parent Involvement*. **In Submission to CHI'22**

Zheng Zhang, Ying Xu, Yanhao Wang, Bingsheng Yao, Daniel Ritchie, Tongshuang Wu, Mo Yu, Dakuo Wang, Toby Jia-Jun Li. *Building an interactive storytelling conversational agent through parent-AI collaboration*. **CUI@CSCW 2021 Workshop: Inclusive and Collaborative Child-facing Voice Technologies**

Zheng Zhang, Hecong Wang, Richie Magnotti, Zhen Bai. *StoryChatBuddy: An Interactive Story Understanding System with Automated Common Sense Reasoning*. **CHI'21 LBW**

Weiwen Leung*, **Zheng Zhang***, Daviti Jibuti, Jinhao Zhao, Maximilian A Klein, Casey Pierce, Lionel Robert, Haiyi Zhu. *Race, Gender and Beauty: The Effect of Information Provision Affects Online Hiring Biases*. **CHI'20** (*equal contribution)

Hao Fei Cheng, Ruotong Wang, **Zheng Zhang**, Fiona O'Connell, Terrance Gray, Max Harper, Haiyi Zhu. *Explaining Decision-Making Algorithms through UI: Strategies to Help Non-Expert Stakeholders*. **CHI'19**

RESEARCH PROJECTS

Error taxonomy, detection, and repair of NL2SQL model

Advisor: Toby Jia-Jun Li, University of Notre Dame Jun. 2021 – Now

- Coding the error types of the state-of-the-art NL2SQL models
- Developing error labeling system
- Developing user interface that supports a range of NL2SQL error detection and repair methods
- Writing a paper to be submitted to CSCW 2022 as the first author

Human-in-the-loop system for audio-visual data annotation

Advisor: Toby Jia-Jun Li, University of Notre Dame Jul. 2021 – Now

- Developed human-in-the-loop system that facilitates the labeling of audio-visual data
- Designed and conducted user study of the labeling system
- Wrote a first-author paper submitted to UI'22

Storytelling system with automatic question generation

Advisor: Toby Jia-Jun Li, University of Notre Dame Jun. 2021 – Sep. 2021

- Developed storytelling system that supports automatic story question generation and flexible parent involvement
- Conducted user study to test the usability and effectiveness of the storytelling system
- Completed data analysis of the study results
- Wrote a first-author paper submitted to CHI'22

Knowledge-aware visual commonsense reasoning

Advisor: Zhen Bai, University of Rochester Sep. 2019 – May. 2021

- Preprocessed ConceptNet data and extracted subgraph for QA instance as commonsense resource
- Trained GCN to learn contextual embedding for concepts in subgraph
- Developed knowledge-aware visual commonsense reasoning model
- Conducted experiment on VCR dataset

HAICOR: Human-in-the-loop tool for enhancing the rationality of AI commonsense reasoning

Advisor: Zhen Bai, University of Rochester Sep. 2019 – May. 2021

- Designed and developed platform facilitating lay users' debugging rationality of AI commonsense reasoning with intelligent argumentative scaffolding
- Developed GPT-2 based knowledge-aware commonsense reasoning model for naïve psychological need prediction on *ROCStories* dataset
- Conducted user study for testing the usability of platform

Race, Gender and Beauty: The Effect of Information Provision Affects Online Hiring Biases

Advisor: Haiyi Zhu, University of Minnesota Jul. 2018 – Apr. 2019

- Developed study website for investigating the effects of racial, sexual, beauty bias on online hiring decision making
- Conducted online user study measuring employees' performance and characteristics as well as employers' hiring decision-making
- Conducted quantitative and qualitative analysis over user data to examine the effect of each type of bias on online hiring decision-making

Explaining Decision-Making Algorithms through UI: Strategies to Help Non-Expert Stakeholders

Advisor: Haiyi Zhu, University of Minnesota Jun. 2018 – Sep. 2018

- Responsible for developing dataset and simulated machine learning model of graduate admission used to elicit subject feedback and design principle
- Performed subject log data processing and quantitative analysis, verify hypotheses
- Performed qualitative analysis and abstracted design strategies away from open-ended responses
- Interviewed with stakeholders and transcribed their feedbacks

Cost-effectiveness of novel strategies for cervical cancer

Advisor: Shalini Kulasingam, University of Minnesota Jun. 2018 – Sep. 2018

- Developed Markov model for predicting cost-effectiveness of candidate novel strategies for cervical cancer with TreeAge
- Performed sensitivity analyses by varying accuracy estimates (Primary, ATHENA-VBA, ATHENA non-VBA) for each screening per strategy
- Performed Cost-effectiveness analysis by employing traditional CEA with ICERs for Primary, ATHENA VBA and ATHENA non-VBA
- Analyzed intermediate results for all fundamental indicators under

each accuracy estimate

Visual question answering mobile app

Advisor: Changsheng Xu, Chinese Academy of Science Feb. 2017 - Jul. 2017

- Designed and implemented CNN model to extract features of images and question/answer pairs, and implemented visual-semantic embedding, jointly modeled word embedding and translation
- Designed crowdsourcing mechanism to refine the answer lists returned by model
- Personalized the user experience in mobile app by customizing the image
- Developed Q&A app 'V guessing', which can list top candidate answers for any question you asked about the displayed picture

TEACHING EXPERIENCE

CSC280: Computer Models and Limitations Fall 2020
Head Teaching Assistant
University of Rochester, Rochester, NY

CSC282/482: Design and Analysis of Algorithm Spring 2020, 2021
Head Teaching Assistant
University of Rochester, Rochester, NY

HONORS (Selected)

SNNU Pacemaker to Merit Student – top 0.05% 2016
Shaanxi Normal University

National Scholarship – top 3% 2014
The Ministry of Education of P.R. China

SNNU Fellowship (6 times, top 5%) 2013 - 2017
Shaanxi Normal University

RESEARCH MENTORING

Hecong Wang Spring 2020 – May 2021
University of Rochester, BS in Computer Science and Physics
Working on HAICOR project

Richie Magnotti Fall 2019 – May 2021
University of Rochester, MS in Computer Science
Now PhD student at Rutgers University
Working on HAICOR project

Technical Skills

Programming skills: C/C++, Java, Python, JavaScript, React, PyTorch, Flask, SQL, MATLAB, R, Node.js

UX skills: qualitative research, quantitative research, data analysis, UX design

Keywords: Commonsense Reasoning, Natural Language Processing, Deep Learning, Web Programming, Human-in-the-loop Machine Learning, Human-AI Collaboration