

Bingsheng Arthur Yao

Postdoctoral Research Associate at Northeastern University

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Research Interests

Human-Centered AI, Use-Inspired AI, Human-AI Collaboration, Real-World Stakeholders, Collaborative Work, Low-Resource Domain-Adaptation

Employment

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|-------------------|--|
| 2025.01 - Current | Northeastern University
Associate Research Scientist |
| 2024.02 - 2025.01 | Northeastern University
Postdoctoral Research Associate (PI: Prof. Dakuo Wang) |
| 2019.09 - 2024.01 | Rensselaer Polytechnic Institute
Research Assistant |
| 2022.05 - 2022.08 | IBM Research
Summer Research Intern |
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Education

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|-------------------|---|
| 2019.09 - 2024.01 | Rensselaer Polytechnic Institute
Ph.D. in Computer Science (Advisor: Prof. Jim Hendler)
Thesis: <i>Enhance Machine Reasoning via Active Learning with Human Rationales</i>
Committee: Dakuo Wang, Mohammed Zaki, Oshani Seneviratne |
| 2018.09 - 2019.05 | Rensselaer Polytechnic Institute
MS in Information Technology and Web Science |
| 2014.09 - 2018.05 | Rensselaer Polytechnic Institute
BS in Computer System Engineering |
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Teaching

Courses

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|-------------|--|
| 2018 Fall | CSCI 2500 Computer Organization (201 Students)
Graduate TA, Rensselaer Polytechnic Institute |
| 2019 Spring | CSCI 4150 Introduction to Artificial Intelligence (182 Students)
Graduate TA, Rensselaer Polytechnic Institute |
| 2023 Fall | CSCI 2500 Computer Organization (344 Students)
Graduate TA, Rensselaer Polytechnic Institute |

Guest Lectures

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|-------------|--|
| 2024 Spring | OHNS 303 Telehealth and Assistive Technology in Speech Language Pathology
“Human-Centered AI Assistance for Sepsis Diagnosis”, University of Southern California |
| 2024 Spring | ARTG 5000 Special Topic in Design: Human-Centered AI System Design and Development
“Human-Centered NLP Systems”, Northeastern University |
| 2024 Fall | CS 7170 Seminar: Artificial Intelligence
“Human-Centered NLP Systems”, Northeastern University |
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Publications

Peer-Reviewed Conferences & Journals

- [P.20] **Characterizing LLM-Empowered Personalized Story-Reading and Interaction for Children: Insights from Multi-Stakeholder Perspectives**
Siyi Wu, Weidan Cao, Shihan Fu, **Bingsheng Yao**, Ziqi Yang, Changchang Yin, Varun Mishra, Daniel Addison, Ping Zhang, Dakuo Wang
CHI 2025
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- [P.19] **CardioAI: A Multimodal AI-based System to Support Symptom Monitoring and Risk Detection of Cancer Treatment-Induced Cardiotoxicity**
Siyi Wu, Weidan Cao, Shihan Fu, **Bingsheng Yao**, Ziqi Yang, Changchang Yin, Varun Mishra, Daniel Addison, Ping Zhang, Dakuo Wang
CHI 2025
- [J.2] **User Interaction Patterns and Breakdowns in Conversing with LLM-Powered Voice Assistants**
Amama Mahmood, Junxiang Wang, **Bingsheng Yao**, Dakuo Wang, Chien-Ming Huang
IJHCS
- [P.18] **Exploring Parent's Needs for Children-Centered AI to Support Preschoolers' Interactive Storytelling and Reading Activities**
Yuling Sun, Jiaju Chen, **Bingsheng Yao**, Jiali Liu, Dakuo Wang, Xiaojuan Ma, Yuxuan Lu, Ying Xu, Liang He
CSCW 2025
- [P.17] **Secret Use of Large Language Model (LLM)**
Zhiping Zhang, Chenxinran Shen, **Bingsheng Yao**, Dakuo Wang, Tianshi Li
CSCW 2025
- [P.16] **"Mango Mango, How to Let The Lettuce Dry Without A Spinner?": Exploring User Perceptions of Using An LLM-Based Conversational Assistant Toward Cooking Partner**
Szeyi Chan, Jiachen Li, **Bingsheng Yao**, Amama Mahmood, Chien-Ming Huang, Holly Jimison, Elizabeth D Mynatt, Dakuo Wang
CSCW 2025
- [P.15] **Sepsislab: Early sepsis prediction with uncertainty quantification and active sensing**
Changchang Yin, Pin-Yu Chen, **Bingsheng Yao**, Dakuo Wang, Jeffrey Caterino, Ping Zhang
KDD 2024
- [P.14] **More Samples or More Prompt Inputs? Exploring Effective In-Context Sampling for LLM Few-Shot Prompt Engineering**
Bingsheng Yao, Guiming Chen, Ruishi Zou, Yuxuan Lu, Jiachen Li, Shao Zhang, Sijia Liu, James Hendler, Dakuo Wang
NAACL 2024 Findings
- [P.13] **Talk2Care: An LLM-based Voice Assistant for Communication between Healthcare Providers and Older Adults**
Ziqi Yang, Xuhai Xu, **Bingsheng Yao**, Shao Zhang, Ethan Rogers, Stephen Intille, Nawar Shara, Dakuo Wang
IMWUT 2024
- [P.12] **"It's a Fair Game", or Is It? Examining How Users Navigate Disclosure Risks and Benefits When Using LLM-Based Conversational Agents**
Zhiping Zhang, Michelle Jia, Hao-Ping (Hank) Lee, **Bingsheng Yao**, Sauvik Das, Ada Lerner, Dakuo Wang, Tianshi Li
CHI 2024
- [P.11] **Rethinking Human-AI Collaboration in Complex Medical Decision Making: A Case Study in Sepsis Diagnosis**
Shao Zhang, Jianing Yu, Xuhai Xu, Changchang Yin, Yuxuan Lu, **Bingsheng Yao**, Melanie Tory, Lace M. Padilla, Jeffrey Caterino, Ping Zhang, Dakuo Wang
CHI 2024
- [P.10] **Mental-LLM: Leveraging Large Language Models for Mental Health Prediction via Online Text Data**
Xuhai Xu, **Bingsheng Yao**, Yuanzhe Dong, Saadia Gabriel, Hong Yu, James Hendler, Marzyeh Ghassemi, Anind K Dey, Dakuo Wang
IMWUT 2024
- [P.9] **StorySparkQA: Expert-Annotated QA Pairs with Real-World Knowledge for Children's Story-Based Learning**
Jiaju Chen, Yuxuan Lu, Shao Zhang, **Bingsheng Yao**, Yuanzhe Dong, Ying Xu, Yunyao Li, Dakuo Wang, Yuling Sun
EMNLP 2024
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- [P.8] Exploring Parent's Needs for Children-Centered AI to Support Preschool Children's Storybook Reading
Yuling Sun, Dakuo Wang, **Bingsheng Yao**, Jiaju Chen, Ying Xu, Xiaojuan Ma, Yuxuan Lu, Liang He
CSCW 2024
- [P.7] `Don't Get Too Technical with Me': A Discourse Structure-Based Framework for Automatic Science Journalism
Ronald Cardenas, **Bingsheng Yao**, Dakuo Wang, Yufang Hou
EMNLP 2023
- [P.6] Beyond Labels: Empowering Human with Natural Language Explanations through a Novel Active-Learning Architecture
Bingsheng Yao, Ishan Jindal, Lucian Popa, Yannis Katsis, Sayan Ghosh, Lihong He, Yuxuan Lu, Shashank Srivastava, James Hendler, Dakuo Wang
EMNLP 2023 Findings
- [P.5] Are Human Explanations Always Helpful? Towards Objective Evaluation of Human Natural Language Explanations
Bingsheng Yao, Prithviraj Sen, Lucian Popa, James Hendler, Dakuo Wang
ACL 2023 Oral Presentation
- [P.4] StoryBuddy: A Human-AI Collaborative Chatbot for Parent-Child Interactive Storytelling with Flexible Parental Involvement
Zheng Zhang*, Ying Xu*, Yanhao Wang, **Bingsheng Yao**, Daniel Ritchie, Tongshuang Wu, Mo Yu, Dakuo Wang, Toby Jia-Jun Li
CHI 2022
- [P.3] Fantastic Questions and Where to Find Them: FairytaleQA -- An Authentic Dataset for Narrative Comprehension
Ying Xu*, Dakuo Wang*, Mo Yu*, Daniel Ritchie*, **Bingsheng Yao***, Tongshuang Wu, Zheng Zhang, Toby Jia-Jun Li, Nora Bradford, Branda Sun, Tran Bao Hoang, Yisi Sang, Yufang Hou, Xiaojuan Ma, Diyi Yang, Nanyun Peng, Zhou Yu, Mark Warschauer
ACL 2022
- [P.2] It is AI's Turn to Ask Humans a Question: Question-Answer Pair Generation for Children's Story Books
Bingsheng Yao*, Dakuo Wang*, Tongshuang Wu, Tran Hoang, Branda Sun, Toby Jia-Jun Li, Mo Yu, Ying Xu
ACL 2022
- [J.1] Narrative Question Answering with Cutting-Edge Open-Domain QA Techniques: A Comprehensive Study
Xiangyang Mou*, Chenghao Yang*, Mo Yu*, **Bingsheng Yao**, Xiaoxiao Guo, Saloni Potdar, Hui Su
TACL 2021
- [P.1] Trust in AutoML: exploring information needs for establishing trust in automated machine learning systems
Jaimie Drozdal, Justin Weisz, Dakuo Wang, Gaurav Dass, **Bingsheng Yao**, Changruo Zhao, Michael Muller, Lin Ju, Hui Su
IUI 2020
- Pre-Prints & Work-In-Progress*
- Towards a Design Guideline for RPA Evaluation: A Survey of Large Language Model-Based Role-Playing Agents
Chaoran Chen, **Bingsheng Yao**, Ruishi Zou, Wenyue Hua, Weimin Lyu, Toby Jia-Jun Li, Dakuo Wang
In Submission
- UXAgent: An LLM Agent-Based Usability Testing Framework for Web Design
Yuxuan Lu, **Bingsheng Yao**, Hansu Gu, Jing Huang, Jessie Wang, Laurence Li, Jiri Gesi, Qi He, Toby Jia-Jun Li, Dakuo Wang
In Submission
- WatchGuardian: Enabling User-Defined Personalized Just-in-Time Intervention on Smartwatch
Ying Lei, Yancheng Cao, Will Wang, Yuanzhe Dong, Changchang Yin, Weidan Cao, Ping Zhang, Jingzhen Yang, **Bingsheng Yao**, Yifan Peng, Chunhua Weng, Randy Auerbach, Lena Mamykina, Dakuo Wang, Yuntao Wang, Xuhai Xu
In Submission
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RECOVER: Designing a Large Language Model-based Remote Patient Monitoring System for Postoperative Gastrointestinal Cancer Care

Ziqi Yang, Yuxuan Lu, Jennifer Bagdasarian, Vedant Das Swain, Ritu Agarwal, Collin Campbell, Waddah Al-Refaire, Jehan El-Bayoumi, Guodong Gao, Dakuo Wang, **Bingsheng Yao**, Nawar Shara

In Submission

" It Felt Like I Was Left in the Dark": Exploring Information Needs and Design Opportunities for Family Caregivers of Older Adult Patients in Critical Care Settings

Shihan Fu, **Bingsheng Yao**, Smit Desai, Yuqi Hu, Yuling Sun, Samantha Stonbraker, Yanjun Gao, Elizabeth M Goldberg, Dakuo Wang

In Submission

More Modality, More AI: Exploring Design Opportunities of AI-Based Multi-modal Remote Monitoring Technologies for Early Detection of Mental Health Sequelae in Youth Concussion Patients

Bingsheng Yao, Menglin Zhao, Yuling Sun, Weidan Cao, Changchang Yin, Stephen Intille, Xuhai Xu, Ping Zhang, Jingzhen Yang, Dakuo Wang

In Submission

Zero-shot Large Language Models for Long Clinical Text Summarization with Temporal Reasoning

Maya Kruse, Shiyue Hu, Nicholas Derby, Yifu Wu, Samantha Stonbraker, **Bingsheng Yao**, Dakuo Wang, Elizabeth Goldberg, Yanjun Gao

In Submission

LLMs are Imperfect, Then What? An Empirical Study on LLM Failures in Software Engineering

Jiessie Tie, **Bingsheng Yao**, Tianshi Li, Syed Ishtiaque Ahmed, Dakuo Wang, Shurui Zhou

In Submission

Designing and Evaluating Sampling Strategies for Multiple-Forecast Visualization (MFV)

Ruishi Zou, Siyi Wu, **Bingsheng Yao**, Dakuo Wang, Lace Padilla

In Submission

Human and Llm-based voice assistant interaction: An analytical framework for user verbal and nonverbal behaviors

Szeyi Chan, Shihan Fu, Jiachen Li, **Bingsheng Yao**, Smit Desai, Mirjana Prpa, Dakuo Wang

In Submission

Clinical Challenges and AI Opportunities in Decision-Making for Cancer Treatment-Induced Cardiotoxicity

Siyi Wu, Weidan Cao, Shihan Fu, **Bingsheng Yao**, Ziqi Yang, Changchang Yin, Varun Mishra, Daniel Addison, Ping Zhang, Dakuo Wang

In Submission

"I Like Sunnie More Than I Expected!": Exploring User Expectation and Perception of an Anthropomorphic LLM-based Conversational Agent for Well-Being Support

Siyi Wu, Julie Y. A. Cachia, Feixue Han, **Bingsheng Yao**, Tianyi Xie, Xuan Zhao, Dakuo Wang

In Submission

" I Wish There Were an AI": Challenges and AI Potential in Cancer Patient-Provider Communication

Ziqi Yang, Xuhai Xu, **Bingsheng Yao**, Jiachen Li, Jennifer Bagdasarian, Guodong Gao, Dakuo Wang

In Submission

Human Still Wins over LLM: An Empirical Study of Active Learning on Domain-Specific Annotation Tasks

Yuxuan Lu, Bingsheng Yao, Shao Zhang, Yun Wang, Peng Zhang, Tun Lu, Toby Jia-Jun Li, Dakuo Wang

In Submission

Workshops

Tianshi Li, Sauvik Das, Hao-Ping (Hank) Lee, Dakuo Wang, **Bingsheng Yao**, and Zhiping Zhang. Human-Centered Privacy Research in the Age of Large Language Models. *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '24)*. Honolulu, USA. 2024. [Special Interests Group @CHI 2024](#)

Mirjana Prpa, Giovanni Maria Troiano, **Bingsheng Yao**, Toby Jia-jun Li, Dakuo Wang, and Hansu Gu. Challenges and Opportunities of LLM-Based Synthetic Personae and Data in HCI. 2024.
[Workshop @CSCW 2024](#)

Services

Area Chair

ACL Rolling Review (Jun 24, Aug 24)

ACM CHI

ACM CSCW

Reviewer

Conferences: ACL Rolling Review: Aug 23, Oct 23, Dec 23, Feb 24; EMNLP: 2023; NAACL: 2024; ACM IMWUT: 2023-24; ACM CHI: 2024; ACM IUI: 2024

Journals: Natural Human Behavior, International Journal of Human-Computer Interaction (IJHCI); International Journal of Human-Computer Studies (IJHCS); CCF Transactions on Pervasive Computing and Interaction (TPCI); Information Process & Management

Honors

- 2019.09 - Current **Member of Upsilon Pi Epsilon**
The International Honor Society for the Computing and Information Disciplines
- 2019.09 - Current **Member of Gamma Nu Eta**
The National Information Technology Honor Society
- 2022.09 - 2023.08 **Artificial Intelligence Research Collaboration Fellowship**
IBM Research
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Mentorship

- 2023.05 - Current **Yuxuan Lu**
Ph.D. student at Northeastern
- 2023.05 - Current **Ziqi Yang**
Master student at UMich (Currently Ph.D. student at UC Irvine)
- 2023.05 - Current **Zhiping Zhang**
Research Assistant at Northeastern (Currently Ph.D. student at Northeastern)
- 2023.05 - Current **Jiaju Chen**
Research Assistant at Northeastern (Currently Master student at Rice)
- 2023.09 - 2024.05 **Jiayi Lu**
Master student at Northeastern (Currently at Amazon)
- 2023.12 - Current **Shihan Fu**
Master student at HKUST Guangzhou (Currently Ph.D. student at Northeastern)
- 2023.12 - Current **Kimberly Do**
Ph.D. student at Northeastern
- 2023.12 - Current **Ruishi Zou**
Undergraduate student at Tongji (Currently Master student at UCSD)
- 2024.02 - Current **Siyi Wu**
Ph.D. student at University of Toronto
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