

Hua Shen Ph.D. (she/her)

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RESEARCH INTERESTS

I am interested in helping humans explain and communicate with AI models via interactions and, moreover, enhancing AI models by aligning their behavior with human feedback. The research keywords include bidirectional human-AI alignment, human-centered AI explanation, human-AI interaction, and conversational AI explanation.

EDUCATION

- 2024.09 - **Postdoctoral Scholar**
Responsible AI Systems and Experiences (RAISE) Center
The Information School
University of Washington, Seattle, USA
- 2023.08 - 2024.08 **Postdoctoral Research Fellow**
School of Information, Division of CSE
University of Michigan, Ann Arbor, USA
- 2019.08 - 2023.07 **Ph.D. in Informatics**
College of Information Sciences and Technology
Penn State University, PA, USA (*GPA: 3.93/4.0*)
- 2013.09 - 2016.06 **M.S. in Management Science and Engineering**
School of Information
Renmin University of China, Beijing, China (*Admission Exam Exemption*)
- 2009.09 - 2013.06 **B.S. in Information Security**
School of Computer & Communication Engineering
University of Science and Technology Beijing, China (*Top: 2/35*)

RESEARCH EXPERIENCE

- 2022.09 - 2023.01 **Google Research**
Research Intern, Speech Intelligence Team, Seattle, USA
MultiTurnCleanup: A benchmark for multi-turn spoken conversational transcript cleanup
- 2022.05 - 2022.08 **Amazon Science**
Applied Scientist Intern, Alexa AI, Language Modeling Team, Seattle, USA
Distilling auto-regressive large language models
- 2021.05 - 2021.08 **Amazon Science**
Applied Scientist Intern, Alexa AI, SpeakerID Team, Sunnyvale, USA
Improving fairness in speaker verification via group-adapted fusion network

- 2019.08 - 2023.07 **Penn State University**
 Research/Teaching Assistant, College of IST, PA, USA
 Improving human-centered AI explanation via Human-AI interaction
- 2018.08 - 2019.08 **Lehigh University**
 Graduate Fellowship, Department of CSE, PA, USA
 Adversarial and robustness of AI interpretability

SELECTED HONORS AND AWARDS

- 2024 **Future Faculty Diversity Program**, ([Acceptance Rate < 20%](#)), Virginia Tech
- 2024 **Best Paper**, ([Top 1%](#), 1/76), AIED Conference
- 2024 **Best Interactive Event Award**, ([Top 1%](#), 1/76), AIED Conference
- 2024 **Carnegie Funds for Faculty Development**, UMich, School of Information
- 2023 **Best Demo** ([Top 6%](#), 1/16), CSCW Conference
- 2023 **Rising Stars of Data Science**, UChicago and UC San Diego
- 2023 **Google Research Science Conference Scholarships (\$3000)**, Google Research
- 2023 **Best Paper Honorable Mention** ([Top 5%](#), 3/65), IUI Conference
- 2020, 2022 **Graduate Student Travel Grant**(Virtual Conferences) ([\\$500](#)), College of IST, PennState
- 2019 **CRA-W Grad Cohort Award (\$2,000)**, Grad Cohort Workshop for Women
- 2018 - 2019 **Lehigh University Fellowship (\$57,752)**, Lehigh University
- 2015 **Outstanding Master Degree Candidate** (Top 12.5%, 5/40), RenMin University of China
- 2013 **Outstanding Merit Student** ([Top 0.2%](#), 1/550), Beijing
- 2013 **Excellent Graduate** ([Top 0.2%](#), 1/550), Beijing
- 2013 **Outstanding-Dissertation Award** ([Top 0.5%](#), 3/550), USTB
- 2011, 2022 **National Endeavor Fellowship (¥10,000, Top 2%, 5/550)**,
- 2012 **Alumni Funding Scholarship (¥5,000, Top 0.3%, 8/3,000)**, USTB

PUBLICATIONS

Manuscripts and Pre-prints

- 2024 P.22 **Hua Shen**, Tiffany Knearem, Reshmi Ghosh, Kenan Alkiek, Kundan Krishna, Yachuan Liu, Ziqiao Ma, Savvas Petridis, Yi-Hao Peng, Li Qiwei, Sushrita Rakshit, Chenglei Si, Yutong Xie, Jeffrey P. Bigham, Frank Bentley, Joyce Chai, Zachary Lipton, Qiaozhu Mei, Rada Mihalcea, Michael Terry, Diyi Yang, Meredith Ringel Morris, Paul Resnick, David Jurgens. [Towards Bidirectional Human-AI Alignment: A Systematic Review for Clarifications, Framework, and Future Directions](#). arXiv:2406.09264.
- P.21 Tuc Nguyen, James Michels, **Hua Shen**, Thai Le. [NoMatterXAI: Generating “No Matter What” Alterfactual Examples for Explaining Black-Box Text Classification Models](#). arXiv:2408.10528.

Archival Conference & Journal Papers

- 2020-2024 P.20 Qianou Christina Ma, **Hua Shen**, Kenneth Koedinger, Tongshuang Wu. [How to Teach Programming in the AI Era? Using LLMs as a Teachable Agent for Debugging](#). The 25th International Conference on Artificial Intelligence in Education.
AIED 2024 🏆 **Best Paper** 🏆 **Best Interactive Event Award**

- P.19 **Hua Shen**, Vicky Zayats, Johann Rocholl, Dan Walker, and Dirk Padfield. [MultiTurn-Cleanup: A Bench-mark for Multi-Turn Spoken Conversational Transcript Cleanup](#). The 2023 Conference on Empirical Methods in Natural Language Processing.
EMNLP 2023 (Oral)
★ **Google AI Research Intern** 🏆 **Google Research Science Conf. Scholarships**
- P.18 **Hua Shen**, Chieh-Yang Huang, Tongshuang Wu, Ting-Hao (Kenneth) Huang. [ConvXAI: Delivering Heterogeneous AI Explanations via Conversations to Support Human-AI Scientific Writing](#). The 26th ACM Conference On Computer-Supported Cooperative Work And Social Computing - Demonstrations.
CSCW 2023 Demo 🏆 **Best Demo**
- P.17 Tongshuang Wu, **Hua Shen**, Daniel S Weld, Jeffrey Heer, Marco Tulio Ribeiro. [ScatterShot: Interactive In-context Example Curation for Text Transformation](#). The ACM Conference on Intelligent User Interfaces.
IUI 2023 🏆 **Best Paper Honorable Mention**
- P.16 **Hua Shen***, Adaku Uchendu*, Jooyoung Lee*, Thai Le, Ting-Hao' Kenneth' Huang, and Dongwon Lee. [Does Human Collaboration Enhance the Accuracy of Identifying Deepfake Texts?](#) The 11th AAAI Conference on Human Computation and Crowdsourcing.
AAAI HCOMP 2023
- P.15 **Hua Shen**, Tongshuang Wu, Wenbo Guo, Ting-Hao (Kenneth) Huang. [Are Shortest Rationales the Best Explanations For Human Understanding?](#) 60th Annual Meeting of the Association for Computational Linguistics.
ACL 2022
- P.14 **Hua Shen***, Yuguang Yang*, Guoli Sun, Ryan Langman, Eunjung Han, Jasha Droppo, Andreas Stolcke. [Improving Fairness in Speaker Verification via Group-adapted Fusion Network](#). 2022 IEEE International Conference on Acoustics, Speech and Signal Processing.
ICASSP 2022 ★ **Amazon AI Applied Scientist Intern**
- P.13 **Hua Shen**, Ting-hao (Kenneth) Huang. [How Useful Are the Machine-Generated Interpretations? A Human Evaluation on Guessing the Wrongly Predicted Labels](#). The 8th AAAI Conference on Human Computation and Crowdsourcing.
AAAI HCOMP 2020
- P.12 Mina Lee, Katy Llonka Gero, John Joon Young Chung, Simon Buckingham Shum, Vipul Raheja, **Hua Shen**, Subhashini Venugopalan, Thiemo Wambsganss, (+28 authors). [A Design Space for Intelligent and Interactive Writing Assistants](#). The ACM CHI conference on Human Factors in Computing Systems.
CHI 2024
- P.11 Binfeng Xu, Xukun Liu, **Hua Shen**, Zeyu Han, Yuhan Li, Murong Yue, Zhiyuan Peng, Yuchen Liu, Ziyu Yao, Dongkuan Xu. [Gentopia.AI: A Collaborative Platform for Tool-Augmented LLMs](#). The 2023 Conference on Empirical Methods in Natural Language Processing - System Demonstration.
EMNLP 2023 Demo
- P.10 Kai-Wei Chang, Haibin Wu, Yu-Kai Wang, Yuan-Kuei Wu **Hua Shen**, Wei-Cheng Tseng, Iu-thing Kang, Shang-Wen Li, Hung-yi Lee. [SpeechPrompt: Prompting Speech Language Models for Speech Processing Tasks](#).
Transactions on Audio, Speech and Language Processing 2024.

- P.9 Xinyang Zhang, Ningfei Wang, **Hua Shen**, Shouling Ji, Ting Wang. [Interpretable Deep Learning under Fire](#). Proceedings of the 29th USENIX Security Symposium. *USENIX 2020*
- P.8 Ren Pang, **Hua Shen**, Xinyang Zhang, Shouling Ji, Yevgeniy Vorobeychik, Xiapu Luo, Alex X. Liu, Ting Wang. [The Tale of Evil Twins: Adversarial Inputs versus Poisoned Models](#). The 27th ACM Conference on Computer and Communications Security. *ACM CCS 2020*
- 2015-2018 P.7 **Hua Shen**, Xun Liang. [A Quantitative Analysis Decision System Based on Deep Learning and NSGA-II for FX Portfolio Prediction](#). The 31st International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems. *IEA-AIE 2018*
- P.6 **Hua Shen**, Xun Liang. [A Time Series Forecasting Model Based on Deep Learning Integrated Algorithm with Stacked Autoencoders and SVR for FX Prediction](#). The 25th International Conference on Artificial Neural Networks. *ICANN 2016*
- P.5 **Hua Shen**, Xun Liang, Mingming Wang. [Emergency Decision Support Architectures for Bus Hijacking Based on Massive Image Anomaly Detection in Social Networks](#). The 2015 IEEE International Conference on Systems, Man, and Cybernetics. *IEEE SMC 2015*

Non-Archival Workshop Papers

- 2020-2024 P.4 **Hua Shen**, Tongshuang Wu. [Parachute: Evaluating Interactive Human-LM Co-writing Systems](#). The In2Writing Workshop at The 2023 ACM CHI Conference. *CHI 2023 In2Writing Workshop*
- P.3 **Hua Shen**, Ting-hao (Kenneth) Huang. [Explaining the Road Not Taken](#). The 2021 ACM CHI Workshop on Operationalizing Human-Centered Perspectives in Explainable AI. *CHI 2021 HCXAI Workshop*
- P.2 Shih-Hong Huang, Chieh-Yang Huang, Yuxin Deng, **Hua Shen**, Szu-Chi Kuan, and Ting-Hao' Kenneth' Huang. [Too Slow to Be Useful? On Incorporating Humans in the Loop of Smart Speakers](#). The WiP/Demo track of the 10th AAAI Conference on Human Computation and Crowdsourcing. *AAAI HCOMP 2022 WiP/Demo*
- P.1 Jiaqi Wang, **Hua Shen**, Chacha Chen, Frank E. Ritter. [Are Learners Satisfied with Their MOOC Experiences? Assessing and Improving Online Learners' Interactions](#). *Asian CHI 2021 Symposium*

Book

- 2014 B.1 Xun Liang, Xiaoping Yang, **Hua Shen**. [Social Commerce Theory and Practice](#)[M], Tsinghua University Press, 2014. *ISBN No. 9787302381129*

Patents

- 2018-2015 PT.2 Xun Liang, **Hua Shen**, Run Cao. [An innovative Emergency Discovery Method for Microblogging](#), Archived by State Intellectual Property Office of The P.R.C (SIPO), Patent Publication. *No. CN103577404A*

- PT.1 Xiaofei Li, Xun Liang, Xiaoping Zhou, Xiaojing Shi, **Hua Shen**, Haiyan Zhang. [A Cross-Platform Microblog Community Account Matching Method](#), Archived by State Intellectual Property Office of The P.R.C (SIPO), Patent Publication.
No. CN104765729A

RESEARCH COMMUNITY SERVICE

Program Committees

HCI	CHI 2025 (Associate Chairs for two subcommittees). CHI LBW 2024 (Associate Chair). CHI'24 HCXAI Workshop. CHI'23 In2Writing Workshop.
NLP	ACL 2023, 2021. EMNLP 2023, 2022. ICML 2023 AI & HCI Workshop.
AI	ICML 2023 AI & HCI Workshop.

Paper Reviewing

NLP	ACL 2024, NAACL 2024, EMNLP 2023, ACL RollingReview (ARR) 2023, 2022, 2021.
HCI	CHI 2024, CHI Late-Breaking Work 2023, 2022.
Speech	ICASSP 2024
AI	NeurIPS 2022 HEGM Workshop. KDD 2020, 2019. ICDM 2019. ASONAM 2019. CIKM 2018. BigData 2018. TIST Transactions on Intelligent Systems and Technology 2019. TIS Transactions on Information Systems 2019.

RESEARCH TALKS

2024.7	Microsoft. Towards Bidirectional Human-AI Alignment via Interaction
2024.7	University of Illinois Urbana-Champaign. Towards Bidirectional Human-AI Alignment via Interaction
2023.12	EMNLP 2023. Oral talk. A Benchmark for Multi-Turn Spoken Conversational Transcript Cleanup
2023.11	University of Michigan. Towards Human-Centered AI Alignment via Interaction
2023.11	Rising Star of Data Science. UChicago & UC San Diego. Towards Useful AI Interpretability via Interactive AI Explanations
2023.10	University of Michigan. Towards Human-Centered AI Alignment via Interaction
2023.07	Carnegie Mellon University. Towards Useful AI Interpretability via Interactive AI Explanations
2023.05	Princeton University. Towards Useful AI Interpretability via Interactive AI Explanations
2023.04	CHI 2023 In2Writing Workshop. Parachute: Evaluating Interactive Human-LM Co-writing Systems
2023.03	IUI 2023. Virtual. ScatterShot: Interactive In-context Example Curation for Text Transformation
2023.01	Google Research. A Benchmark for Multi-Turn Spoken Conversational Transcript Cleanup
2022.09	University of Notre Dame. Useful XAI via Interactive AI Explanations


2022.08, 2021.08	Amazon Alexa AI. Distilling Auto-Regressive Large Language Models Improving Fairness in Speaker Verification Models
2021.05	CHI 2021 HCXAI Workshop. A Survey on Human-Centered Explainable NLP

MENTORING EXPERIENCE

PhD	Qianou (Christina) Ma (Carnegie Mellon University) How to Teach Programming in the AI Era? Using LLMs as a Teachable Agent for Debugging Teaching Humans to Articulate Requirements for LLMs Snehal Prabhudesai (University of Michigan) How Students Critically Engage with LLMs through End-User Auditing Activity Jooyoung Lee (Penn State) Human collaborative evaluation on LLM-generated deepfake texts Kenan Alkiek (University of Michigan) Spatial Understanding of Large Language Models
Master	Anmol Mansingh (University of Michigan) How Students Critically Engage with LLMs through End-User Auditing Activity Ruchi Panchanadikar (Penn State; Incoming PhD at Clemson University) Developing Interactive AI Explanation System
Bachelor	Yuxin Deng (Penn State; Master at CMU) Human Study of Interactive AI Explanation System Ananya Kasi (University of Michigan) How Students Critically Engage with LLMs through End-User Auditing Activity Reuben Lee (Penn State; TDP at Capital One) Developing Interactive AI Explanation System Sushirita Rakshit (University of Michigan) Understanding of Large Language Models Yijun Pan (University of Michigan) Understanding of Large Language Models Daniel Tian (University of Michigan) Understanding of Large Language Models Omkar Yadav (University of Michigan) Stylometric Authorship Discernment and Interpretation Haotian Zhang (University of Michigan) Stylometric Authorship Discernment and Interpretation Michael Jiang (University of Michigan) Stylometric Authorship Discernment and Interpretation

TEACHING ASSISTANT EXPERIENCE

Penn State University

2021	 Graduate Student Online Teaching Certificate
2023 SP, 2021 FA	[DS 330] Visual Analytics for Data Sciences <i>Undergraduate course, 70 students (Instructor: Luke Zhang, Sharon Huang)</i>
2022 SP	[DS 320] Data Integration <i>Undergraduate course, 50 students (Instructor: Yasser EL-Manzalawy)</i>

2021 SP, 2020 FA **[DS 397] Algorithmic Methods**

Undergraduate course, 25 students (Instructor: Hadi Hosseini)

2023, 2021 **[IST 261] Application Development Studio I**

Undergraduate course, 50 students (Instructor: Kenneth Huang)

Renmin University of China

2015 FA **Calculus II**

Undergraduate course, 50 students (Instructor: Wenlin Huang)

2015 SP **Calculus I**

Undergraduate course, 50 students (Instructor: Wenlin Huang)

2014 FA **Linear Algebra**

Undergraduate course, 40 students (Instructor: Qijiang Song)

2013 FA, 2014 SP **Probability Theory and Mathematical Statistics**

Undergraduate course, 40 students (Instructor: Qijiang Song)

MEDIA AND CONFERENCE COVERAGE

NAACL 2024 **Tutorial on Human-AI Interaction in the Age of LLMs.**

Featuring Papers: [ScatterShot](#), [HypoCompass](#), [ConvXAI](#)

Instructor: [Diyi Yang](#), [Sherry Tongshuang Wu](#), [Marti Hearst](#)

ACL 2024 **Tutorial on Automatic & Human-AI Interactive Text Generation.**

Featuring Papers: [Parachute](#), [Design Space for In2Writing](#)

Instructor: [Yao Dou](#), [Philippe Laban](#), [Claire Gardent](#), [Wei Xu](#)

EMNLP 2023 **Tutorial on Designing, Evaluating, and Learning from Humans Interacting with NLP Models.**

Featuring Paper: [Parachute](#)

Speaker: [Tongshuang Wu](#), [Diyi Yang](#) and [Sebastin Santy](#)

PSU News 2020 **Users don't understand computer explanations for image labeling errors.**

[PSU News](#), [TechXplore News](#), [ClickTech News](#)

OUTREACH AND LEADERSHIP

Service and Leadership

2024 **MichiganAI Seminar Tsar**, [Michigan AI Lab](#).

Coordinated MichiganAI seminars, including inviting speakers, coordinating and broadcasting seminars, and handled seminar logistics in July and August 2024.

2024 **MichiganAI Social Media Take-Over:**, [Michigan AI Lab](#).

Took over Michigan AI Lab social media, i.e., Twitter and Facebook, in July 2024.

2024 **Co-Organizer**, [The Michigan Interactive and Social Computing \(MISC\) research group](#).

Co-organized the research events in 2024-2025 that connect researchers of HCI, CSCW across The University of Michigan from June to August, 2024.

2022 **Student contributor**, [JSALT 2022](#).

Contributed in the JSALT Leveraging Pre-training Models for Speech Processing Team.

2021	Invited lecturer , Penn State IST 501, Host: Dr. Mary Beth Rosson. 1 of the 3 representatives of 2019 PhDs to mentor 2020 PhDs in qualification exam.
2021	Course design lecturer , Penn State DS 330, Host: Dr. Sharon Huang. Served in Visual analytics for data sciences course project lecture.
2016-2018	Leader , CMBC Management Trainee Program. Served in head office future bankers program of China Minsheng Bank.
2014	Liaison officer , Singapore deputy prime minister delegation in APEC. Served in APEC (Asia-Pacific Economic Cooperation) finance ministerial meeting.
2012	Vice Chairman , USTB student union presidium . Served in the 6th presidium of the 22nd session of USTB student union.

TECHNICAL AND METHOD SKILLS

DL/ML Programming	PyTorch, TensorFlow, PyTorch-Transformers, S3PRL Speech, Scikit-Learn
System Development	Full-stack (frontend + ML-based backend) interactive system development.
Web and Visualization	React.js, HTML/CSS, JavaScript, D3.js, Bootstrap, Matplotlib
HCI/UX Research	Human Interview and Qualitative Coding, Human Studies and and Statistical Analysis
Database	Microsoft SQL Server, MySQL, PostgreSQL
Miscellaneous	Amazon MTurk Crowdsourcing, Adobe Illustrator, LaTeX
Operational Systems	Ubuntu, Linux/Unix, Shell Script, MacOS, Windows