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: human-AI alignment, human-centered AI explanation, human-AI interaction, conversational AI explanation.

EDUCATION

2023.08 -	**Postdoctoral Research Fellow** University of Michigan, Ann Arbor, USA *Advisor*: Dr. David Jurgens
2019.08 - 2023.07	**Ph.D. in Informatics** (GPA: 3.93/4.0) Penn State University, PA, USA *Advisor*: Dr. Ting-Hao (Kenneth) Huang *Committee*: Sherry Tongshuang Wu, Mary Beth Rosson, Lee Giles, S. Shyam Sundar
2013.09 - 2016.06	**M.S. in Management Science and Engineering** (Admission Exam Exemption) Renmin University of China, Beijing, China Advisor: Dr. Xun Liang
2009.09 - 2013.06	**B.S. in Information Security** (Top: 2/35) University of Science and Technology Beijing, China

RESEARCH EXPERIENCE

2022.09 - 2023.01	**Google Research** Research Intern, Speech Intelligence Team, Seattle, USA) *Mentors*: Vicky Zayats, Johann Rocholl, Dan Walker, Dirk Padfield 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 *Mentors*: Jari Kolehmainen, Yi Gu, Qi Luo, Aditya Gourav, Ivan Bulyko *(Sr.) Principal Scientists*: Ankur Gandhe, Denis Filimonov, Ariya Rastrow, Andreas Stolcke Distilling auto-regressive large language models
2021.05 - 2021.08	**Amazon Science** Applied Scientist Intern, Alexa AI, SpeakerID Team, Sunnyvale, USA *Mentors*: Yuguang Yang, Guoli Sun, Ryan Langman, Eunjung (Christine) Han *(Sr.) Principal Scientist Advisors*: Jasha Droppo, Andreas Stolcke 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
Advisor: Ting-Hao (Kenneth) Huang
Improving human-centered AI explanation via Human-AI interaction

2018.08 - 2019.08 **Lehigh University**
Graduate Fellowship, Department of CSE, PA, USA
Advisors: Brian D. Davison, Ting Wang
Adversarial and robustness of AI interpretability

SELECTED HONORS AND AWARDS

2024	**Best Paper**, AIED Conference
2024	**Best Interactive Event Award**, AIED Conference
2024	**Carnegie Funds for Faculty Development**, UMich, School of Information
2023	**President's Postdoctoral Fellowship Program Candidate**, (Runner-up), UMich, CSE
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 Mentioned** (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.21 **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.

Peer-reviewed Conference & Workshop Publications

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. Parachute: Evaluating Interactive Human-LM Co-writing Systems. The In2Writing Workshop at The 2023 ACM CHI Conference.
CHI 2023 In2Writing Workshop

P.14   **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.13   **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.12   **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.11   **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.10   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.9   Mina Lee, Katy Ilonka 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.8   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.7	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.6	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*
	P.5	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.4	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.3	**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.2	**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.1	**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*

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*

TEACHING ASSISTANT EXPERIENCE

Penn State University

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

MENTORING EXPERIENCE

PhD	**Qianou (Christina) Ma** (CMU)
	LLM-based Tutor for Hypothesis Construction in Debugging for Novices
	Jooyoung Lee (Penn State)
	Human collabrative evaluation on LLM-generated deepfake texts
	Kenan Alkiek (University of Michigan)
	Spatial Understanding of Large Language Models
Master	**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
	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

RESEARCH TALKS

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**. Lightning Talk.
	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 AI Research**. Virtual.
	A Benchmark for Multi-Turn Spoken Conversational Transcript Cleanup
2022.09	**University of Notre Dame**. Virtual.
	Useful XAI via Interactive AI Explanations
2022.08	**Amazon Alexa AI**. Virtual.
	Distilling Auto-Regressive Large Language Models
2021.08	**Amazon Alexa AI**. Virtual.
	Improving Fairness in Speaker Verification Models
2021.05	**CHI 2021 HCXAI Workshop**.
	A Survey on Human-Centered Explainable NLP

COMMUNITY SERVICE AND LEADERSHIP

Program Committees

NLP	**ACL** 2023, 2021. **EMNLP** 2023, 2022.
HCI	**CHI** 2025. **CHI LBW** 2024. **CHI**'24 HCXAI Workshop. **CHI**'23 In2Writing 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.

Service and Leadership

2024	**Co-organizer**, The Michigan Interactive and Social Computing (MISC) research group.
	Co-organizing the research events in 2024-2025 that connects researchers of HCI, CSCW across University of Michigan.
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.

MEDIA COVERAGE

2020	**Users don't understand computer explanations for image labeling errors**.
	PSU News, 2020.10
	TechXplore News, 2020.10
	ClickTech News, 2020.10

TECHNICAL SKILLS

DL/ML Programming	PyTorch, TensorFlow, PyTorch-Transformers, S3PRL Speech, Scikit-Learn
Operational Systems	Ubuntu, Linux/Unix, Shell Script, MacOS, Windows
Web and Visualization	React.js, HTML/CSS, JavaScript, D3.js, Bootstrap, Matplotlib
HCI/UX Research	Controlled User Study, Empirical Methods and Statistical Analysis
Database	Microsoft SQL Server, MySQL, PostgreSQL
Miscellaneous	Amazon MTurk Crowdsourcing, Adobe Illustrator, LaTex