

# Hua Shen Ph.D. (she/her)

Postdoctoral Research Fellow  
School of Information  
University of Michigan  
Ann Arbor, MI, 48103

+1 484-929-4568  
<http://hua-shen.org>  
[huashen218@gmail.com](mailto:huashen218@gmail.com)  
[@huashen218](https://twitter.com/huashen218)

## RESEARCH INTERESTS

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

## EDUCATION

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- 2023.08 - **Postdoc 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

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- 2022.09 - 2023.01 **Google AI 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

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- 2023 **Google Research Science Conference Scholarships (\$3000)**, Google Research
- 2023 **Best Demo (Top 6%, 1/16)**, CSCW Conference
- 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

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### Manuscripts and Pre-prints

- 2023 P.18 Kai-Wei Chang, Yu-Kai Wang, **Hua Shen**, Iu-thing Kang, Wei-Cheng Tseng, Shang-Wen Li, Hung-yi Lee. [SpeechPrompt V2: Prompt Tuning for Speech Classification Tasks](#). arXiv:2303.00733.

### Peer-reviewed Conference & Workshop Publications

- 2023-2020 P.17 **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*  
 ★ **Google AI Research Intern** 🏆 **Google Research Science Conf. Scholarships**
- P.16 **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.15 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.14 **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.13 **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.12 **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.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 **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.9 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.8 **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.7 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.6 **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.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*
- 2018-2015 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

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### 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

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- PhD      [Qianou \(Christina\) Ma](#) (CMU)  
LLM-based Tutor for Hypothesis Construction in Debugging for Novices
- [Jooyoung Lee](#) (Penn State)  
Human collaborative evaluation on LLM-generated deepfake texts

Master	<a href="#">Ruchi Panchanadikar</a> (Penn State; Incoming PhD at Clemson University) Developing Interactive AI Explanation System
Bachelor	<a href="#">Yuxin Deng</a> (Penn State; Incoming Master at CMU) Human Study of Interactive AI Explanation System <a href="#">Reuben Lee</a> (Penn State; Incoming TDP at Capital One) Developing Interactive AI Explanation System

## RESEARCH TALKS

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2023.07	<b>Carnegie Mellon University</b> . Onsite. Host: Dr.Artur W. Dubrawski. <a href="#">Towards Useful AI Interpretability via Interactive AI Explanations</a>
2023.05	<b>Princeton University</b> . Onsite. Host: Dr.Ruth Fong. <a href="#">Towards Useful AI Interpretability via Interactive AI Explanations</a>
2023.04	<b>CHI 2023 In2Writing Workshop</b> . Onsite. Host: Dr. Katy Ilonka Gero <a href="#">Parachute: Evaluating Interactive Human-LM Co-writing Systems</a>
2023.03	<b>IUI 2023</b> . Virtual. Host: Dr. Evangelos Niforatos <a href="#">ScatterShot: Interactive In-context Example Curation for Text Transformation</a>
2023.01	<b>Google AI Research</b> . Virtual. Host: Dr. Vicky Zayats <a href="#">A Benchmark for Multi-Turn Spoken Conversational Transcript Cleanup</a>
2022.09	<b>University of Notre Dame</b> . Virtual. Host: Zheng Zhang <a href="#">Useful XAI via Interactive AI Explanations</a>
2022.08	<b>Amazon Alexa AI</b> . Virtual. Host: Dr. Jari Kolehmainen <a href="#">Distilling Auto-Regressive Large Language Models</a>
2021.08	<b>Amazon Alexa AI</b> . Virtual. Host: Dr. Yuguang Yang <a href="#">Improving Fairness in Speaker Verification Models</a>
2021.05	<b>CHI 2021 HCXAI Workshop</b> . Virtual. Host: Upol Ehsan <a href="#">A Survey on Human-Centered Explainable NLP</a>

## COMMUNITY SERVICE AND LEADERSHIP

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### Program Committees

NLP	<b>ACL</b> 2023, 2021. <b>EMNLP</b> 2022.
HCI	<b>CHI 2023 In2Writing Workshop</b> .
AI	<b>ICML 2023 AI &amp; HCI Workshop</b> .

### Paper Reviewing

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

### Service and Leadership

2022	<b>Student contributor, JSALT 2022.</b> Contributed in the JSALT Leveraging Pre-training Models for Speech Processing Team.
2021	<b>Invited lecturer, Penn State IST 501, Host: Dr. Mary Beth Rosson.</b> 1 of the 3 representatives of 2019 PhDs to mentor 2020 PhDs in qualification exam.
2021	<b>Course design lecturer, Penn State DS 330, Host: Dr. Sharon Huang.</b> Served in Visual analytics for data sciences course project lecture.
2016-2018	<b>Leader, CMBC Management Trainee Program.</b> Served in head office future bankers program of China Minsheng Bank.
2014	<b>Liaison officer, Singapore deputy prime minister delegation in APEC.</b> Served in APEC (Asia-Pacific Economic Cooperation) finance ministerial meeting.
2012	<b>Vice Chairman, USTB student union presidium.</b> Served in the 6th presidium of the 22nd session of USTB student union.

## MEDIA COVERAGE

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2020	<b>Users don't understand computer explanations for image labeling errors.</b> <a href="#">PSU News</a> , 2020.10 <a href="#">TechXplore News</a> , 2020.10 <a href="#">ClickTech News</a> , 2020.10
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## TECHNICAL SKILLS

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

## REFERENCES

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Dr. <b>Ting-Hao 'Kenneth' Huang</b>	Assistant Professor, College of IST, Penn State University
Dr. <b>Sherry Tongshuang Wu</b>	Assistant Professor, HCIL, School of CS, Carnegie Mellon University
Dr. <b>Mary Beth Rosson</b>	Professor, Associate dean of IST and director of graduate programs (Emeritus), Penn State University
Dr. <b>Andreas Stolcke</b>	Senior Principal Scientist in Amazon Alexa Speech, ICSI (UC Berkeley)
Dr. <b>Yuguang Yang</b>	Microsoft, Senior Applied Scientist.
Dr. <b>Vicky Zayats</b>	Google Research, Research Scientist