

# LIANGMING PAN

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College of Information Science, University of Arizona

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H-Index: 23 (Google Scholar)

 [Google Scholar](#)  [Twitter](#)  [GitHub](#)

## WORK EXPERIENCE

### Aug. 2024 – present

Assistant Professor, [College of Information Science, University of Arizona](#)  
Tucson, Arizona, United States

- Research Topic: Trustworthy Large Language Models, Natural Language Processing

### Dec. 2022 – Jul. 2024

Postdoctoral Researcher, [UC Santa Barbara Natural Language Processing Group \(UCSB-NLP\)](#)  
Santa Barbara, California, United States

- Advisor: Prof. [William Yang Wang](#)
- Research Topic: Towards Responsible Large Language Models

### Aug. 2022 – Dec. 2022

Research Fellow, [NUS Center for Trusted Internet and Community \(CTIC\)](#)  
National University of Singapore, Singapore

- Advisor: Prof. [Mongli Lee](#)
- Research Topic: Automated Fact-Checking

## EDUCATION

### Jan. 2018 – May. 2022

Ph.D., Integrative Sciences and Engineering Programme (ISEP)  
National University of Singapore, Singapore

- Degree: Doctor of Philosophy
- Major: Computer Science
- Supervisor: Associate Prof. [Min-Yen Kan](#), Co-Supervisor: Prof. [Tat-Seng Chua](#)
- Year degree received: June, 2022
- Thesis Topic: Towards Generating Deep Questions from Text

### Aug. 2020 – Jun. 2021

Visiting Ph.D. Student, UC Santa Barbara Natural Language Processing Group (UCSB-NLP)  
Santa Barbara, California, United States

- Advisor: Prof. [William Yang Wang](#)
- Research Topic: Unsupervised Multi-hop Question Answering by Question Generation

### Sep. 2014 – Jun. 2017

Master's Degree, Computer Science and Technology  
Tsinghua University, Beijing, China

- Degree: Master of Engineering
- Major: Computer Science and Technology
- Supervisor: Prof. [Juanzi Li](#), and Prof. [Jie Tang](#)
- Thesis Topic: Course Concept Extraction and Relation Learning in Massive Open Online Courses (MOOCs)

### Sep. 2010 – Jun. 2014

Bachelor of Engineering, Software Engineering  
Beihang University, Beijing, China

- Degree: Bachelor of Engineering
- Major: Software Engineering

## INVITED AND CONFERENCE TALKS

- Jul. 2024 Invited Talk, Peking University, China
- Jul. 2024 Invited Talk, Tsinghua University, China
- Mar. 2024 Invited Talk, University of Arizona, USA
- Feb. 2024 Invited Talk, Singapore Management University
- Feb. 2024 Invited Talk, University of California, Merced
- Jan. 2024 Invited Talk, Arizona State University, USA
- Dec. 2023 Invited Talk, National University of Singapore [\[Slides\]](#)
- Dec. 2023 Poster Presentation, EMNLP 2023, Singapore
- Nov. 2023 Invited Talk, Sichuan University
- Nov. 2023 Oral Presentation, IJCNLP-AAACL 2023, Bali
- Jul. 2023 Poster Presentation, ACL 2023, Toronto, Canada [\[Abstract\]](#) [\[Slides\]](#)
- Feb. 2023 Invited Talk, Mohamed bin Zayed University of Artificial Intelligence (MBZUAI)
- Apr. 2022 Invited Talk, Singapore Management University
- Mar. 2022 Invited Talk, deeplearning.ai [\[Abstract\]](#) [\[Slides\]](#)
- Aug. 2021 Invited Talk, Nanyang Technological University [\[Abstract\]](#) [\[Slides\]](#) [\[Video\]](#)
- Aug. 2021 Oral Presentation, ACL-IJCNLP 2021, Online [\[Presentation\]](#) [\[Slides\]](#)

<b>Jun. 2021</b>	Oral Presentation, NAACL 2021, Online	<a href="#">[Presentation]</a>
<b>Feb. 2021</b>	Invited Talk, National University of Singapore	<a href="#">[Abstract]</a>
<b>Oct. 2020</b>	Oral Presentation, ACM MM 2020, Online	
<b>Aug. 2020</b>	Invited Talk, Fudan University, Shanghai, China	
<b>Jul. 2020</b>	Oral Presentation, ACL 2020, Online	<a href="#">[Presentation]</a>

## **RESEARCH GRANTS AND AWARDS**

1. Proposal Co-Writer, 2023 CISCO Faculty Research Award, \$80K USD. Neuro-Symbolic Methods for Abductive Reasoning.
2. Proposal Co-Writer, 2023 Google Deepmind Award, \$100K. Context, Knowledge, and Uncertainty: A Unified Reasoning & Discovery Framework (extension 2).
3. Proposal Co-Writer, 2023 JP Morgan Chase Faculty Award, \$80K. Augmented Large Language Models for Automating Cognitive Workflows.

## **PREPRINTS**

1. Xianjun Yang, **Liangming Pan**, Xuandong Zhao, Haifeng Chen, Linda Petzold, William Yang Wang, Wei Cheng. [A Survey on Detection of LLMs-Generated Content](#). *arXiv:2310.15654* (2023)
2. Yuxia Wang, Revanth Gangi Reddy, Zain Muhammad Mujahid, Arnav Arora, Aleksandr Rubashevskii, Jiahui Geng, Osama Mohammed Afzal, **Liangming Pan**, Nadav Borenstein, Aditya Pillai, Isabelle Augenstein, Iryna Gurevych, Preslav Nakov. [Factcheck-GPT: End-to-End Fine-Grained Document-Level Fact-Checking and Correction of LLM Output](#). *arXiv:2311.09000* (2023)
3. Alfonso Amayuelas, **Liangming Pan**, Wenhui Chen, William Yang Wang. [Knowledge of Knowledge: Exploring Known-Unknowns Uncertainty with Large Language Models](#). *arXiv:2305.13712* (2023)
4. Shuo Zhang, **Liangming Pan**, Junzhou Zhao, William Yang Wang. [Mitigating Language Model Hallucination with Interactive Question-Knowledge Alignment](#). *arXiv:2305.13669* (2023)
5. **Liangming Pan**, Wenqiang Lei, Tat-Seng Chua, Min-Yan Kan. [Recent Advances in Neural Question Generation](#). *arXiv:1905.08949* (2019)

## **CONFERENCE PUBLICATIONS**

1. Jundong Xu, Hao Fei, **Liangming Pan**, Qian Liu, Mong-Li Lee, and Wynne Hsu. [Faithful Logical Reasoning via Symbolic Chain-of-Thought](#). Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL 2024)
2. Wenda Xu, Guanglei Zhu, Xuandong Zhao, **Liangming Pan**, Lei Li, and William Yang

- Wang. [Pride and Prejudice: LLM Amplifies Self-Bias in Self-Refinement](#). Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL 2024)
3. Alfonso Amayuelas, Kyle Wong, **Liangming Pan**, Wenhua Chen, and William Yang Wang. [Knowledge of Knowledge: Exploring Known-Unknowns Uncertainty with Large Language Models](#). Findings of the Annual Meeting of the Association for Computational Linguistics (Findings of ACL 2024)
  4. Shuo Zhang, **Liangming Pan**, Junzhou Zhao, and William Yang Wang. [The Knowledge Alignment Problem: Bridging Human and External Knowledge for Large Language Models](#). Findings of the Annual Meeting of the Association for Computational Linguistics (Findings of ACL 2024)
  5. Xinze Li, Yixin Cao, **Liangming Pan**, Yubo Ma, and Aixin Sun. [Towards Verifiable Generation: A Benchmark for Knowledge-aware Language Model Attribution](#). Findings of the Annual Meeting of the Association for Computational Linguistics (Findings of ACL 2024)
  6. Xiaobao Wu, Xinshuai Dong, **Liangming Pan**, Thong Nguyen, and Anh Tuan Luu. [Modeling Dynamic Topics in Chain-Free Fashion by Evolution-Tracking Contrastive Learning and Unassociated Word Exclusion](#). Findings of the Annual Meeting of the Association for Computational Linguistics (Findings of ACL 2024)
  7. Xinyi Wang, Alfonso Amayuelas, Kexun Zhang, **Liangming Pan**, Wenhua Chen, and William Yang Wang. [Understanding Reasoning Ability of Language Models From the Perspective of Reasoning Paths Aggregation](#). Proceedings of the International Conference on Machine Learning (ICML 2024)
  8. Iain Xie Weissburg, Mehir Arora, Xinyi Wang, **Liangming Pan**, and William Yang Wang. [Tweets to Citations: Unveiling the Impact of Social Media Influencers on AI Research Visibility](#). Proceedings of the International Conference on Machine Learning (ICML 2024)
  9. **Liangming Pan**, Alon Albalak, Xinyi Wang, William Yang Wang. [Logic-LM: Empowering Large Language Models with Symbolic Solvers for Faithful Logical Reasoning](#). Findings of the 2023 Conference on Empirical Methods in Natural Language Processing (Findings of EMNLP 2023)
  10. Yikang Pan\*, **Liangming Pan\***, Wenhua Chen, Preslav Nakov, Min-Yen Kan, William Yang Wang. [On the Risk of Misinformation Pollution with Large Language Models](#). Findings of the 2023 Conference on Empirical Methods in Natural Language Processing (Findings of EMNLP 2023) (\*equal contribution)
  11. Xinyuan Lu\*, **Liangming Pan\***, Qian Liu, Preslav Nakov, Min-Yen Kan. [SCITAB: A Challenging Benchmark for Compositional Reasoning and Claim Verification on Scientific Tables](#). Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023) (\*equal contribution)
  12. Wenda Xu, Danqing Wang, **Liangming Pan**, Zhenqiao Song, Markus Freitag, William Yang Wang, Lei Li. [INSTRUCTSCORE: Towards Explainable Text Generation Evaluation with Automatic Feedback](#). Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023)

13. Deepak Nathani, David Wang, **Liangming Pan**, William Yang Wang. [MAF: Multi-Aspect Feedback for Improving Reasoning in Large Language Models](#). Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023)
14. Shizhe Diao, Yongyu Lei, **Liangming Pan**, Tianqing Fang, Wangchunshu Zhou, Sedrick Scott Keh, Min-Yen Kan, Tong Zhang. [Doolittle: Benchmarks and Corpora for Academic Writing Formalization](#). Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP 2023)
15. **Liangming Pan**, Xinyuan Lu, Min-Yen Kan, Preslav Nakov. [QACHECK: A Demonstration System for Question-Guided Multi-Hop Fact-Checking](#). Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing System Demonstrations Track (EMNLP 2023 Demo Track)
16. **Liangming Pan**, Xiaobao Wu, Xinyuan Lu, Anh Tuan Luu, William Yang Wang, Min-Yen Kan, Preslav Nakov. [Fact-Checking Complex Claims with Program-Guided Reasoning](#). Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL 2023)
17. Xuan Long Do, Bowei Zou, Shafiq Joty, Tran Tai, **Liangming Pan**, Nancy Chen, Ai Ti Aw. [Modeling What-to-ask and How-to-ask for Answer-unaware Conversational Question Generation](#). Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL 2023)
18. **Liangming Pan**, Wenhui Chen, Min-Yen Kan, William Yang. [Attacking Open-domain Question Answering by Injecting Misinformation](#). Proceedings of the 3rd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 13th International Joint Conference on Natural Language Processing (AAACL-IJCNLP 2023) (Area Chair Award in Question Answering Track)
19. **Liangming Pan\***, Yunxiang Zhang\*, Min-Yen Kan. [Investigating Zero- and Few-shot Generalization in Fact Verification](#). Proceedings of the 3rd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 13th International Joint Conference on Natural Language Processing (AAACL-IJCNLP 2023) (\*equal contribution)
20. Yan Meng\*, **Liangming Pan\***, Yixin Cao, Min-Yen Kan. [FOLLOWUPOG: Towards Information-Seeking Follow-up Question Generation](#). Proceedings of the 3rd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 13th International Joint Conference on Natural Language Processing (AAACL-IJCNLP 2023) (\*equal contribution)
21. Shizhe Diao, Sedrick Scott Keh, **Liangming Pan**, Zhiliang Tian, Yan Song, Tong Zhang. [Hashtag-Guided Low-Resource Tweet Classification](#). Proceedings of the ACM Web Conference (WWW 2023)
22. Xiaobao Wu, Xinshuai Dong, Thong Nguyen, Chaoqun Liu, **Liangming Pan**, Anh Tuan Luu. [InfoCTM: A Mutual Information Maximization Perspective of Cross-lingual Topic Modeling](#). Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI 2023)
23. Huanli Gong, **Liangming Pan**, Hengchang Hu. [KHANO: A Dataset for Generating Deep](#)

[Questions in Education](#). Proceedings of the 29th International Conference on Computational Linguistics (COLING 2022)

24. Xuan Long Do, Bowei Zou, **Liangming Pan**, Nancy F. Chen, Shafiq Joty, Ai Ti Aw. [CoHS-CQG: Context and History Selection for Conversational Question Generation](#). Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (COLING 2022)

25. Bowei Zou, Pengfei Li, **Liangming Pan**, Ai Ti Aw. [Automatic True/False Question Generation for Educational Purpose](#). Proceedings of the 17th Workshop on Innovative Use of NLP for Building Educational Applications (BEA@NAACL 2022)

26. Jianlong Wu, **Liangming Pan**, Jingjing Chen, Yu-Gang Jiang. [Ingredient-enriched Recipe Generation from Cooking Videos](#). Proceedings of the 2022 International Conference on Multimedia Retrieval (ICMR 2022)

27. Hengchang Hu, **Liangming Pan**, Yiding Ran, Min-Yen Kan. [Modeling and Leveraging Prerequisite Context in Recommendation](#). Proceedings of the Workshop on Context-Aware Recommender Systems at the 17th ACM Conference on Recommender Systems (CARS@RecSys 2022)

28. Shulin Cao, Jiaxin Shi, **Liangming Pan**, Lunyiu Nie, Yutong Xiang, Lei Hou, Juanzi Li, Hanwang Zhang, Bin He. [KQA Pro: A Dataset with Explicit Compositional Programs for Complex Question Answering over Knowledge Base](#). Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (ACL 2022)

29. Yunxiang Zhang, **Liangming Pan**, Samson Tan, Min-Yen Kan. [Interpreting the Robustness of Neural NLP Models to Textual Perturbations](#). Findings of the 60th Annual Meeting of the Association for Computational Linguistics (Findings of ACL 2022)

30. **Liangming Pan**, Wenhua Chen, Wenhan Xiong, Min-Yen Kan, William Yang Wang. [Zero-shot Fact Verification by Claim Generation](#). Proceedings of the Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)

31. **Liangming Pan**, Wenhua Chen, Wenhan Xiong, Min-Yen Kan, William Yang Wang. [Unsupervised Multi-hop Question Answering by Question Generation](#). Proceedings of the 2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2021)

32. **Liangming Pan**, Yuxi Xie, Yansong Feng, Min-Yen Kan, Tat-Seng Chua. [Semantic Graphs for Deep Question Generation](#). Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020)

33. Yuxi Xie, **Liangming Pan**, Dongzhe Wang, Min-Yen Kan, Yansong Feng. [Exploring Question-Specific Rewards for Generating Deep Questions](#). Proceedings of the 28th International Conference on Computational Linguistics (COLING 2020)

34. **Liangming Pan**, Jingjing Chen, Jianlong Wu, Shaoteng Liu, Chong-Wah Ngo, Min-Yen Kan, Yu-Gang Jiang, Tat-Seng Chua. [Multi-modal Cooking Workflow Construction for Food Recipes](#). Proceedings of the 28th ACM International Conference on Multimedia (ACM MM 2020)

35. Zhiyuan Liu, Yixin Cao, **Liangming Pan**, Juanzi Li, Tat-Seng Chua. [Exploring and Evaluating Attributes, Values, and Structures for Entity Alignment](#). Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP 2020)
36. Yixin Cao, Ruihao Shui, **Liangming Pan**, Min-Yen Kan, Zhiyuan Liu, Tat-Seng Chua. [Expertise Style Transfer: A New Task Towards Better Communication between Experts and Laymen](#). Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020)
37. Shaoteng Liu, Jingjing Chen, **Liangming Pan**, Chong-Wah Ngo, Tat-Seng Chua, Yugang Jiang. [Hyperbolic Visual Embedding Learning for Zero-Shot Recognition](#). Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2020)
38. Jingjing Chen, **Liangming Pan**, ZhipengWei, Xiang Wang, Chong-Wah Ngo, Tat-Seng Chua. [Zero-shot Ingredient Recognition by Multi-Relational Graph Convolutional Network](#). Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI 2020)
39. Jifan Yu, **Liangming Pan**, Juanzi Li, and Xiaoping Du. [Predicting Concept-based Research Trends with Rhetorical Framing](#). Proceedings of the 3th China Conference on Knowledge Graph and Semantic Computing (CCKS 2018)
40. **Liangming Pan**, Chengjiang Li, Juanzi Li, and Jie Tang. [Prerequisite Relation Learning for Concepts in MOOCs](#). In Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (ACL 2017)
41. **Liangming Pan**, Xiaochen Wang, Chengjiang Li, Juanzi Li, and Jie Tang. [Course Concept Extraction in MOOCs via Embedding-Based Graph Propagation](#). In Proceedings of the 8th International Joint Conference on Natural Language Processing (IJCNLP 2017)
42. **Liangming Pan**, Zhigang Wang, Juanzi Li, and Jie Tang. [Domain Specific Cross-lingual Knowledge Linking based on Similarity Flooding](#). In Proceedings of the 9th International Conference on Knowledge Science, Engineering and Management (KSEM 2016)
43. Zhigang Wang, **Liangming Pan**, Juanzi Li, Shuangjie Li, Mingyang Li, and Jie Tang. [Boosting to Build a Large-scale Cross-lingual Ontology](#). In Proceedings of the 1th China Conference on Knowledge Graph and Semantic Computing (CCKS 2016)
44. Yan Zhang, Hailong Jin, **Liangming Pan**, and Juanzi Li. [RiMOM results for OAEI 2016](#). In Proceedings of the 11th International Workshop on Ontology Matching (OM@ISWC 2016)

## **JOURNAL PUBLICATIONS**

1. **Liangming Pan**, Michael Saxon, Wenda Xu, Deepak Nathani, Xinyi Wang, and William Yang Wang. [Automatically Correcting Large Language Models: Surveying the Landscape of Diverse Automated Correction Strategies](#). *Transactions of the Association for Computational Linguistics (TACL)*, 2024.
2. Alon Albalak, Yanai Elazar, Sang Michael Xie, Shayne Longpre, Nathan Lambert, Xinyi

Wang, Niklas Muennighoff, Bairu Hou, **Liangming Pan**, Haewon Jeong, Colin Raffel, Shiyu Chang, Tatsunori Hashimoto, and William Yang Wang. [A Survey on Data Selection for Language Models](#). *Transactions on Machine Learning Research (TMLR)*, 2024

3. **Liangming Pan**, Jingjing Chen, Shaoteng Liu, Chong-Wah Ngo, Min-Yen Kan, Tat-Seng Chua. [A Hybrid Approach for Detecting Prerequisite Relations in Multi-modal Food Recipes](#). *IEEE Transactions on Multimedia*. 2020 Dec 9.

4. Yahui An, **Liangming Pan**, Min-Yen Kan, Qiang Dong, Yan Fu. [Resource Mention Extraction for MOOC Discussion Forums](#). *IEEE Access* 7 (2019): 87887-87900.

5. Weiwei Wang, Zhigang Wang, **Liangming Pan**, Yang Liu, and Jiangtao Zhang. Research on the Construction of Bilingual Movie Knowledge Graph. *Journal of Acta Scientiarum Naturalium Universitatis Pekinensis* 2016 (paper in Chinese)

## **HONORS AND AWARDS**

Nov. 2023	Area Chair Award (Question Answering), IJCNLP-AAACL 2023 (awarding rate: 13 / 131)
Jan. 2021	Dean's Graduate Research Excellence Award, National University of Singapore (awarding rate: less than 2%)
Oct. 2020	Research Achievement Reward, National University of Singapore (awarding rate: less than 5%)
Jun. 2017	Excellent master postgraduate of CS department, Tsinghua (awarding rate: less than 5%)
Oct. 2016	First prize of 'Friends of Tsinghua — Renrendai scholarship' (awarding rate: less than 10%)
Apr. 2013	Meritorious Winner of Mathematical Contest in Modeling

## **PROFESSIONAL SERVICES**

### **Conference Program Committee Member / Reviewer**

Area Chair, ACL 2024, EMNLP 2024, COLING 2025

Area Chair, Question Answering, ACL 2023

Session Chair, Dialog Systems, ACL 2023

Senior PC member, IJCAI 2021

PC member of EMNLP 2020-2024

PC member of ACL 2020-2024

PC member of NAACL 2021-2024

PC member of AAAI 2022-2024

Reviewer of ACL Rolling Review (ARR)



**Journal Reviewer**

Transactions of the Association for Computational Linguistics (TACL)

IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)

**Other Activities**

Organizer of the [WING NUS Natural Language Processing \(NLP\) Seminar 2021](#)

Session Chair, [The 2022 Singapore Symposium on Natural Language Processing \(SSNLP\)](#)