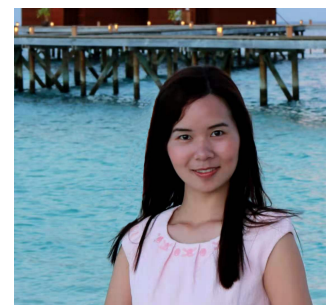LIAO Lizi

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Education

PhD, National University of Singapore, Singapore, 2019

Bachelor of Engineering, Beijing Institute of Technology, China, 2011

Academic Appointments

Assistant Professor of Computer Science, School of Computing and Information Systems, SMU, Jan 2022 - Present

RESEARCH

Research Interests

My research explores two questions: What are the underlying principles of humans understanding conversation context as well as making proper responses, and how we can implement them on machine learning models? Research on this topic has to necessarily be at the intersection of Machine Learning, Natural Language Processing and Multimedia. In my lab, we are specifically interested in task-oriented dialogues, proactive conversational agents, and multimodal conversational search and recomendation as the application target.

Research and Project Areas

My research can be summarized as the following aspects:

multimodal dialogue systems: belief state tracking, response generation, policy learning etc.
recommendation: neural collaborative filtering, conversational recommendation etc.
multimedia analysis: cross-modal retrieval, fashion compatibility modeling, multimodal chatbot etc.

Publications

Journal Articles [Refereed]

Leveraging Multiple Relations for Fashion Trend Forecasting Based on Social Media, by DING, Yujuan; MA,

Yunshan; LIAO, Lizi; WONG, Wai Keung; CHUA, Tat-Seng. (2022). *IEEE Transactions on Multimedia, 24* 2287-2299. https://doi.org/10.1109/TMM.2021.3078907 (Published)

Topic-Guided Conversational Recommender in Multiple Domains, by LIAO, Lizi; TAKANOBU, Ryuichi; MA, Yunshan; YANG, Xun; HUANG, Minlie; CHUA, Tat-Seng. (2022). *IEEE Transactions on Knowledge and Data Engineering, 34* (5), 2485-2496. https://doi.org/10.1109/TKDE.2020.3008563 (Published)

State Graph Reasoning for Multimodal Conversational Recommendation, by WU, Yuxia; LIAO, Lizi; ZHANG, Gangyi; LEI, Wenqiang; ZHAO, Guoshuai; QIAN, Xueming; CHUA, Tat-Seng. (2023). *IEEE Transactions on Multimedia, 25* 3113-3124. https://doi.org/10.1109/TMM.2022.3155900 (Published)

Multi-Relation Extraction via A Global-Local Graph Convolutional Network, by CHENG, Harry; LIAO, Lizi; HU, Linmei; NIE, Liqiang. (2022). *IEEE Transactions on Big Data, 8* (6), 1716-1728. (Published)

A Patience-Aware Recommendation Scheme for Shared Accounts on Mobile Devices, by MAO, Kaili; NIU, Jianwei; LIU, Xuefeng; TANG, Shaojie; LIAO, Lizi; CHUA, Tat-Seng. (2022). *IEEE Transactions on Knowledge and Data Engineering, 34* (12), 5571-5585. https://doi.org/10.1109/TKDE.2021.3069002 (Published)

Dialogue State Tracking with Incremental Reasoning, by LIAO, Lizi; LONG, Le Hong; MA, Yunshan; LEI, Wenqiang; CHUA, Tat-Seng. (2021). *Transactions of the Association for Computational Linguistics, 9* 557-569. http://doi.org/10.1162/tacl_a_00384 (Published)

Attributed Social Network Embedding, by LIAO, Lizi; HE, Xiangnan; ZHANG, Hanwang; CHUA, Tat-Seng. (2018). *IEEE Transactions on Knowledge and Data Engineering, 30* (12), 2257-2270. https://doi.org/10.1109/TKDE.2018.2819980 (Published)

Conference Proceedings

Harnessing holistic discourse features and triadic interaction for sentiment quadruple extraction in dialogues, by LI, Bobo; FEI, Hao; LIAO, Lizi; ZHAO, Yu; SU, Fangfang; LI, Fei; JI, Donghong. (2024.0). *The 38th Annual AAAI Conference on Artificial Intelligence, Vancouver, February 20-27,* Washington, DC: AAAI Press. (Accepted)

Reverse multi-choice dialogue commonsense inference with graph-of-thought, by ZHENG, Li; FEI, Hao; LI, Fei; Li, Bobo; LIAO, Lizi; JI, Donghong; TENG, Chong. (2024.0). *Proceedings of the 38th Annual AAAI Conference on Artificial Intelligence, Vancouver, Canada, 2024 February 20-27*

, Washington: AAAI. https://doi.org/10.48550/arXiv.2312.15291 (Accepted)

Reinforced target-driven conversational promotion, by DAO, Huy Quang; LIAO, Lizi; LE, Dung D.; NIE, Yuxiang . (2023.0). *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing, Singapore, December 6-10,* (pp. 12583-12596) USA: Association for Computational Linguistics. (Published)

ClusterPrompt: Cluster semantic enhanced prompt learning for new intent discovery, by LIANG, Jinggui; LIAO, Lizi. (2023.0). *Findings of the Association for Computational Linguistics: EMNLP 2023,* (pp. 10468-10481) SIngapore: Association for Computational Linguistics. https://doi.org/10.18653/v1/2023.findings-emnlp.702 (Published)

End-to-end task-oriented dialogue: A survey of tasks, methods, and future directions, by QIN, Libo; PAN, Wenbo; CHEN, Qiguang; LIAO, Lizi; YU, Zhou; ZHANG, Yue; CHE, Wanxiang; LI, Min. (2023.0). *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing, Singapore, December 6-10,* (pp. 5925-5941) USA: Association for Computational Linguistics (ACL). (Published)

Prompting and evaluating large language models for proactive dialogues: Clarification, target-guided, and non-collaboration, by DENG, Yang; LIAO, Lizi; CHEN, Liang; WANG, Hongru; LEI, Wenqiang; CHUA, Tat-Seng. (2023.0). *Findings of the Association for Computational Linguistics: EMNLP 2023,* (pp. 10602-10621) Singapore: Association for Computational Linguistics. https://doi.org/10.18653/v1/2023.findings-emnlp.711 (Published)

Revisiting disentanglement and fusion on modality and context in conversational multimodal emotion recognition, by LI, Bobo; FEI, Hao; LIAO, Lizi; ZHAO, Yu; TENG, Chong; CHUA, Tat-Seng; Ji, Donghong; LI, Fei. (2023.0). *MM '23: Proceedings of the 31st ACM International Conference on Multimedia: Ottawa, October 29 - November 3,* (pp. 5923-5934) New York: ACM. https://doi.org/10.1145/3581783.3612053 (Published)

Partial annotation-based video moment retrieval via iterative learning, by JI, Wei; LIANG, Renjie; LIAO, Lizi; FEI, Hao; FENG, Fuli. (2023.0). *Proceedings of the 31st ACM International Conference on Multimedia, Ottawa, Canada, 2023 October 29-November 3 ,* (pp. 4330-4339) New York: ACM. https://doi.org/10.1145/3581783.3612088 (Published)

Real: A representative error-driven approach for active learning, by CHEN, Cheng; WANG, Yong; LIAO, Lizi; CHEN, Yueguo; DU, Xiaoyong. (2023.0). *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Turin, Italy, 2023 September 18-22,* (pp. 20-37) New York: Springer. https://doi.org/10.1007/978-3-031-43412-9_2 (Published)

Proactive conversational agents in the post-ChatGPT world, by LIAO, Lizi; YANG, Grace Hui; SHAH, Chirag. (2023.0). *SIGIR '23: Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval, Taipei, July 23-27,* (pp. 3452-3455) New York: ACM. (Published)

DiaASQ: A benchmark of conversational aspect-based sentiment quadruple analysis, by LI, Bobo; FEI, Hao; LI, Fei; WU, Yuhan; ZHANG, Jinsong; WU, Shengqiong; LI, Jingye; LIU, Yijiang; LIAO, Lizi; CHUA, Tat-Seng; JI, Donghong
. (2023.0). *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics, Toronto, Canada, 2023 July 9-14,* (pp. 13449-13467) Texas: ACL. https://doi.org/10.18653/v1/2023.findings-acl.849 (Published)

Proactive conversational agents, by LIAO, Lizi; YANG, Grace Hui; SHAH, Chirag. (2023.0). *WSDM 2023: Proceedings of the 16th ACM International Conference on Web Search and Data Mining: Singapore, February 27-March 3,* (pp. 1244-1247) New York: ACM. https://doi.org/10.1145/3539597.3572724 (Published)

Semi-supervised new slot discovery with incremental clustering, by WU, Yuxia; LIAO, Lizi; QIAN, Xuemin; CHUA, Tat-Seng. (2022.0). *Findings of the 2022 Conference on Empirical Methods in Natural Language Processing, Abu Dhabi, 2022 December 7 -11,* Stroudsburg, Pennsylvania, United States: Association for Computational Linguistics. (Published)

A unified dialogue user simulator for few-shot data augmentation, by WAN, Dazhen; ZHANG, Zheng; ZHU, Qi; LIAO, Lizi; HUANG, Minlie. (2022.0). *Proceedings of the 2022 Conference on Empirical Methods in Natural Language Processing EMNLP: Abu Dhabi, December 7-11,* (pp. 3788-3799) Stroudsburg: ACL. https://aclanthology.org/2022.findings-emnlp.277/ (Published)

Conversation disentanglement with bi-level contrastive learning, by HUANG, Chengyu; ZHANG, Zheng; FEI, Hao; LIAO, Lizi. (2022.0). *Proceedings of the 2022 Conference on Empirical Methods in Natural Language Processing EMNLP, Abu Dhabi, December 7-11,* (pp. 2985-2996) Abu Dhabi: ACL. https://aclanthology.org/2022.findings-emnlp.217/ (Published)

Reflecting on experiences for response generation, by YE, Chenchen; LIAO, Lizi; LIU, Suyu; CHUA, Tat-Seng. (2022.0). *Proceedings of the 30th ACM International Conference on Multimedia, Lisboa, Portugal, 2022 October 10 - 14,* (pp. 5265-5273) Lisbon: Association for Computing Machinery. https://doi.org/10.1145/3503161.3548305 (Published)

Learning to ask critical questions for assisting product search, by LI, Zixuan; LIAO, Lizi; CHUA, Tat-Seng. (2022.0). *Proceedings of 2022 ACM SIGIR Workshop on eCommerce, Madrid, Spain, July 15,* Madrid: Association for Computing Machinery. https://sigir-ecom.github.io/ecom22Papers/paper_6978.pdf (Presented)

Towards enriching responses with crowd-sourced knowledge for task-oriented dialogue, by HE, Yingxu; LIAO, Lizi; ZHANG, Zheng; CHUA, Tat-Seng. (2021.0). *MuCAI '21: Proceedings of the 2nd ACM Multimedia Workshop on Multimodal Conversational AI, Virtual, October 24,* (pp. 3-11) New York: ACM. https://doi.org/10.1145/3475959.3485392 (Published)

Reproducibility companion paper: knowledge enhanced neural fashion trend forecasting, by MA, Yunshan; DING, Yujuan; YANG, Xun; LIAO, Lizi; WONG, Wai Keung; CHUA, Tat-Seng; MOON, Jinyoung; SHUAI, Hong-Han. (2021.0). *Proceedings of the 2021 International Conference on Multimedia Retrieval, Taipei, Taiwan, August 21 - 24,* (pp. 615-618) New York: Association for Computing Machinery. https://doi.org/10.1145/3460426.3463598 (Published)

MMConv: An environment for multimodal conversational search across multiple domains, by LIAO, Lizi; LONG, Le Hong; ZHANG, Zheng; HUANG, Minlie; CHUA, Tat-Seng. (2021.0). *SIGIR '21: Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval, July*

11-15, Virtual, (pp. 675-684) New York: ACM. https://doi.org/10.1145/3404835.3462970 (Published)

Multi-domain dialogue state tracking with recursive inference, by LIAO, Lizi; ZHU, Tongyao; LONG, Le Hong; CHUA, Tat-Seng
. (2021.0). *Proceedings of the 2021 World Wide Web Conference, Ljubljana, Slovenia, April 19 - 23,* (pp. 2568-2577) United States: Association for Computing Machinery. https://doi.org/10.1145/3442381.3450134 (Published)

Knowledge enhanced neural fashion trend forecasting, by MA, Yunshan; DING, Yujuan; YANG, Xun; LIAO, Lizi; WONG, Wai Keung; CHUA, Tat-Seng. (2020.0). *ICMR '20: Proceedings of the 2020 International Conference on Multimedia Retrieval,* (pp. 82-90) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3372278.3390677 (Published)

Who, where, and what to wear?: extracting fashion knowledge from social media, by MA, Yunshan; YANG, Xun; LIAO, Lizi; CAO, Yixin; CHUA, Tat-Seng. (2019.0). *MM '19: Proceedings of the 27th ACM International Conference on Multimedia,* (pp. 257-265) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3343031.3350889 (Published)

Automatic fashion knowledge extraction from social media, by MA, Yunshan; LIAO, Lizi; CHUA, Tat-Seng. (2019.0). *MM '19: Proceedings of the 27th ACM International Conference on Multimedia,* (pp. 2223-2224) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3343031.3350607 (Published)

Neural multimodal belief tracker with adaptive attention for dialogue systems, by ZHANG, Zheng; LIAO, Lizi; HUANG, Minlie; ZHU, Xiaoyan; CHUA, Tat-Seng. (2019.0). *WWW '19: The World Wide Web Conference,* (pp. 2401-2412) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3308558.3313598 (Published)

TransNFCM: translation-based neural fashion compatibility modeling, by YANG, Xun; MA, Yunshan; LIAO, Lizi; WANG, Meng; CHUA, Tat-Seng. (2019.0). *Proceedings of the 33rd AAAI Conference on Artificial Intelligence, Honolulu, Hawaii, USA, 2019 January 27 - February 1,* (pp. 403-410) Hawaii: AAAI Press. https://doi.org/10.1609/aaai.v33i01.3301403 (Published)

Knowledge-aware multimodal fashion chatbot, by LIAO, Lizi; ZHOU, You; MA, Yunshan; HONG, Richang; CHUA, Tat-Seng. (2018.0). *MM '18: Proceedings of the 26th ACM international conference on Multimedia, Seoul, October 22-26,* (pp. 1265-1266) Seoul Republic of Korea : ACM. http://doi.org/10.1145/3240508.3241399 (Published)

Knowledge-aware multimodal dialogue systems, by LIAO, Lizi; MA, Yunshan; HE, Xiangnan; HONG, Richang; CHUA, Tat-Seng. (2018.0). *MM '18: Proceedings of the 26th ACM international conference on Multimedia,* (pp. 801-809) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3240508.3240605 (Published)

Interpretable multimodal retrieval for fashion products, by LIAO, Lizi; HE, Xiangnan; ZHAO, Bo; NGO, Chong-Wah; CHUA, Tat-Seng. (2018.0). *MM '18: Proceedings of the 26th ACM international conference on Multimedia,* (pp. 1571-1579) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3240508.3240646 (Published)

Representativeness-aware aspect analysis for brand monitoring in social media, by LIAO, Lizi; HE, Xiangnan; REN, Zhaochun; NIE, Liqiang; XU, Huan; CHUA, Ta-Seng. (2017.0). *Proceedings of the 26th International Joint Conference on Artificial Intelligence, Melbourne, Australia, 2017 August 19 - 25,* (pp. 310-316) Melbourne, Australia: AAAI Press. https://doi.org/10.24963/ijcai.2017/44 (Published)

Neural collaborative filtering, by HE, Xiangnan; LIAO, Lizi; ZHANG, Hanwang; NIE, Liqiang; HU, Xia; CHUA, Tat-Seng. (2017.0). *Proceedings of the 26th International Conference on World Wide Web, Perth, Australia, 2017 April 3 - 7,* (pp. 173-182) Republic and Canton of Geneva, Switzerland: International World Wide Web Conferences Steering Committee. https://doi.org/10.1145/3038912.3052569 (Published)

SLR: A scalable latent role model for attribute completion and tie prediction in social networks, by LIAO, Lizi; HO, Qirong; JIANG, Jing; LIM, Ee Peng. (2016.0). *2016 IEEE 32nd International Conference on Data Engineering (ICDE),* (pp. 1062-1073) Helsinki: IEEE. https://doi.org/10.1109/ICDE.2016.7498313 (Published)

Lifetime lexical variation in social media, by LIAO, Lizi; JIANG, Jing; DING, Ying; HUANG, Heyan; LIM, Ee-Peng. (2014.0). *Proceedings of the 28th AAAI Conference on Artificial Intelligence, Québec, Canada, 2014 July 27 - 31,* (pp. 1643-1649) Palo Alto, California, U.S.: AAAI Press. https://www.aaai.org/Conferences/AAAI/aaai14.php (Published)

Research Grants

Singapore Management University

ProExpan: Proactive Ontology Expansion for Conversational Agents, Academic Research Fund (AcRF) Tier 2, Ministry of Education (MOE) , PI (Project Level): LIAO Lizi , Co-PI (Project Level): Jing JIANG, 2023, S$729,963

Advancing LLMs for Target-Driven Conversation: A Dual Model Framework, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): LIAO Lizi , Co-PI (Project Level): LIM Ee Peng, 2023, S$190,000

Multi-Party Response Generation with Unsupervised Conversation Disentanglement, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): LIAO Lizi, 2022, S$99,720

TEACHING

Teaching Areas

IS428 Visual Analytis for Business Intelligence
IS483 Project Experience (Applications)

Courses Taught

Singapore Management University

Undergraduate Programmes :

    Data Management

    IS/SMT Project Experience (Applications)

    Visual Analytics for Business Intelligence

Postgraduate Research Programmes :

    Empirical Research Project 1

    Empirical Research Project 4

EXTERNAL SERVICE – PROFESSIONAL

Conference Chair, WSDM 2023 Organizers, ACM, 2023

Area Chair, NLPCC2022 Organizers, CCF, 2022

Session Chair, ACM SIGIR 2022 Organizers, ACM, 2022

Program Coordinator, ACMMM19 Organizers, ACM, 2019