

YI CHENG

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EDUCATION

The Hong Kong Polytechnic University

Ph.D. in Computer Science

Hong Kong, China

Sep 2021 – Present

- **Advisor:** Prof. Maggie Wenjie Li
- **Research Interests:** Conversational AI, Emotional Support Conversations, Medical Consultation Dialogues

Peking University

B.S. in Computer Science

Beijing, China

Sep 2016– June 2020

- **Advisor:** Associate Prof. Sujian Li
- **Research Interests:** Chinese Discourse Parsing, Question Generation

University of Oxford

Exchange Student, Summer Program

Oxford, United Kingdom

July 2018 – Aug 2018

PUBLICATIONS

(*indicates equal contribution)

- **Integrative Decoding: Improve Factuality via Implicit Self-consistency.** Submitted to ICLR 2025.
Yi Cheng, Xiao Liang, Yeyun Gong, Wen Xiao, Song Wang, et al.
- **Cooper: Coordinating Specialized Agents towards a Complex Dialogue Goal.** AAAI 2024.
Yi Cheng, Wenge Liu, Jian Wang, Chak Tou Leong, Yi Ouyang, Wenjie Li, Xian Wu, and Yefeng Zheng.
- **Self-Detoxifying Language Models via Toxication Reversal.** EMNLP 2023.
Chak Tou Leong*, Yi Cheng*, Jiashuo Wang, Jian Wang, and Wenjie Li.
- **Improving Multi-turn Emotional Support Dialogue Generation with Lookahead Strategy Planning.** EMNLP 2022.
Yi Cheng*, Wenge Liu*, Wenjie Li, Jiashuo Wang, Ruihui Zhao, Bang Liu, Xiaodan Liang, Yefeng Zheng.
- **MedDG: An Entity-Centric Medical Consultation Dataset for Entity-Aware Medical Dialogue Generation.** NLPCC 2022.
Wenge Liu*, Jianheng Tang*, Yi Cheng*, Wenjie Li, Yefeng Zheng, Xiaodan Liang.
- **“My nose is running.” “Are you also coughing?”: Building A Medical Diagnosis Agent with Interpretable Inquiry Logics.** IJCAI 2022.
Wenge Liu*, Yi Cheng*, Hao Wang, Jianheng Tang, Yafei Liu, Ruihui Zhao, Wenjie Li, Yefeng Zheng, Xiaodan Liang.
- **Guiding the Growth: Difficulty-Controllable Question Generation through Step-by-Step Rewriting.** ACL 2021.
Yi Cheng, Siyao Li, Bang Liu, Ruihui Zhao, Sujian Li, Chenghua Lin, Yefeng Zheng.
- **Unifying Discourse Resources with Dependency Framework.** CCL 2021.
Yi Cheng, Sujian Li, Yueyuan Li.
- **Zero-shot Chinese Discourse Dependency Parsing via Cross-lingual Mapping.** DSNLNG workshop@INLG 2019.
Yi Cheng, Sujian Li.
- **ICON: Improving Inter-Report Consistency of Radiology Report Generation via Lesion-aware Mix-up Augmentation.** EMNLP 2024 Findings.
Wenjun Hou, Yi Cheng*, Kaishuai Xu, Yan Hu, Wenjie Li, Jiang Liu.
- **Reasoning Like a Doctor: Improving Medical Dialogue Systems via Diagnostic Reasoning Process Alignment.** ACL 2024 Findings.
Kaishuai Xu, Yi Cheng*, Wenjun Hou*, Qiaoyu Tan, Wenjie Li.
- **Target-oriented Proactive Dialogue Systems with Personalization: Problem Formulation and Dataset Curation.** EMNLP 2023.
Jian Wang, Yi Cheng, Dongding Lin, Chak Tou Leong, and Wenjie Li.
- **RECAP: Towards Precise Radiology Report Generation via Dynamic Disease Progression Reasoning.** EMNLP 2023.
Wenjun Hou, Yi Cheng*, Kaishuai Xu*, Wenjie Li, Jiang Liu
- **ORGan: Observation-Guided Radiology Report Generation via Tree Reasoning.** ACL 2023.
Wenjun Hou, Yi Cheng*, Kaishuai Xu*, Wenjie Li, Jiang Liu.
- **Medical Dialogue Generation via Dual Flow Modeling.** ACL Findings 2023.
Kaishuai Xu, Wenjun Hou*, Yi Cheng*, Jian Wang, Wenjie Li
- **CARE: Causality Reasoning for Empathetic Responses by Conditional Graph Generation.** EMNLP Findings 2022.
Jiashuo Wang, Yi Cheng, Wenjie Li.

RESEARCH EXPERIENCES

Exploring Inference-time Scaling Laws in Large Language Models | Research Intern

Advisor: Yeyun Gong, Microsoft Research Asia

June 2024 – Sep 2024

- Proposed a decoding algorithm with self-consistency incorporated into its objective, robustly improving factuality performance over six series of LLMs. The performance gains amplify progressively with repeated sampling, suggesting a practical avenue to realize “inference-time scaling laws” on open-ended generation tasks.
- Contributed to a first-author paper submitted to ICLR 2025.

Towards Emotional Support Conversation Systems with Goal Awareness | Ph.D. Student

Advisor: Prof. Maggie Wenjie Li, Department of Computing, The Hong Kong Polytechnic University

Sep 2021 – Present

- Proposed a support strategy planning algorithm with lookahead heuristics to estimate the long-term effects of the adopted strategy on the user.
- Designed a dialogue framework, Cooper, which coordinates multiple specialized agents to collectively work towards a complex dialogue goal (e.g., emotional support, persuasion).
- Proposed a lightweight approach to avoid generating toxic content by manipulating the information flow within the attention layers of the language model during inference.
- Contributed to three first-author papers published at EMNLP 2022, EMNLP 2023, and AAI 2023.

Constructing Interpretable Medical Consultation Systems | Research Intern

Advisor: Dr. Yefeng Zheng, Tencent Jarvis Research Center

Feb 2021 – Dec 2021

- Constructed the first large-scale entity-centric medical consultation dialogue dataset, MedDG.
- Proposed an interpretable medical consultation system by mimicking human doctors’ inquiry logics.
- Won the 1st Prize for “the Competition at 21st China National Conference on Computational Linguistics: Automated Medical Diagnosis Systems” in 2021.
- Contributed to two first-author papers published at NLPC 2022 and IJCAI 2022.

Difficulty Controllable Question Generation | Research Assistant

Advisor: Assistant Prof. Bang Liu, University of Montreal

June 2021 – January 2021

- Defined question difficulty as the number of inference steps required to answer it and proposed a framework that progressively increases the question difficulty through step-by-step rewriting.
- Contributed to a first-author paper published at ACL 2021.

Chinese Discourse Dependency Parsing | Research Assistant

Advisor: Associate Prof. Sujian Li, Institute of Computational Linguistics, Peking University

Sep 2018 – June 2020

- Proposed a zero-shot approach to conduct Chinese discourse dependency parsing via cross-lingual mapping.
- Explored the feasibility of unifying discourse resources with the dependency discourse framework.
- Contributed to two first-author paper published at DSNL 2019 and CCL 2021.

PROFESSIONAL ACTIVITIES

Challenge Organizer

- Organized the ICLR 2021 Challenge: Machine Learning for Preventing and Combating Pandemics.

Conference Reviewer

- Served as the reviewer for SIGIR (2023), ACL (2022), COLING (2022), EMNLP (2021).

Teaching Assistant

- Served as the teaching assistant for the course “COMP 6709: Advanced Natural Language Processing” in Spring 2023 and Spring 2024 at the Hong Kong Polytechnic University.

EXTRACURRICULAR ACTIVITIES

We Media

Dec 2020 – July 2022

- Served as the editor-in-chief of “夕小瑶科技说”(formerly known as “夕小瑶的卖萌屋”), an influential Chinese WeChat public account focused on the field of NLP.
- Led the team producing over 200 original articles, and the number of subscribers rose from 15k to 100k+.

HONORS & AWARDS

- 1st Prize for the Competition at 21st China National Conference on Computational Linguistics: Automated Medical Diagnosis Systems 2021
- Outstanding Graduate of Peking University 2020
- “Award for Research Excellent” at Peking University 2018, 2019
- 3rd Prize for the “Tencent Cup” Program Design Competition 2018

TECHNICAL SKILLS

- Language: Chinese (Native), English (Fluent)
- Standard English Test: TOEFL 111 (R: 30; L: 29; S: 27; W: 25), GRE V-156 + Q-170 + W-4.0
- Coding: Python, C/C++