ZUJIE LIANG

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EDUCATION

Sun Yat-Sen University (SYSU), China *2019 - July 2022 (Expected)*
M.Phil. in Information and Communication Engineering

Wuhan University of Technology (WHUT), China *2015 - 2019*
B.Eng. in Communication Engineering

RESEARCH BACKGROUND

My previous research broadly lies at the intersection of Natural Language Processing and Computer Vision, with a focus on three areas: 1) multimodal bias reduction; 2) open-ended Conversational AI; 3) flexible/controllable text generation. I am very interested in understanding various human-centric properties of AI models, such as interpretability, generalization, causality, fairness and bias. In my spare time, I maintain Awesome-Visual-Question-Answering, which is a curated list of papers in the field of Visual QA (360+ stars now).

PUBLICATIONS

1. **Zujie Liang***, Huang Hu*, Can Xu, Chongyang Tao, Xiubo Geng, Yining Chen, Fan Liang, Daxin Jiang. "Maria: A Visual Experience Powered Conversational Agent". *Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics (**ACL**)*, 2021. [PDF] [Code] [Slides]

2. **Zujie Liang***, Huang Hu*, Can Xu, Jian Miao, Yingying He, Yining Chen, Xiubo Geng, Fan Liang, Daxin Jiang. "Learning Neural Templates for Recommender Dialogue System". *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (**EMNLP**)*, 2021. [PDF] [Code]

3. **Zujie Liang**, Haifeng Hu, Jiaying Zhu. "LPF: A Language-Prior Feedback Objective Function for De-biased Visual Question Answering". *Proceeding of 44th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**)*, 2021. [PDF] [Code] [Slides]

4. **Zujie Liang**, Weitao Jiang, Haifeng Hu, Jiaying Zhu. "Learning to Contrast the Counterfactual Samples for Robust Visual Question Answering". *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (**EMNLP**)*, 2020. [PDF] [Code] [Slides]

RESEARCH & WORK EXPERIENCES

Microsoft Beijing, China
NLP Research Intern, Supervised by Huang Hu and Dr. Daxin Jiang *Oct. 2020 - June 2021*

- This group mainly investigates Conversational AI for *Chat with Bing* Project.
- *ACL 2021* One of my task was to explore how to empower a conversational AI to not only converse freely with human but also have the ability to perceive the physical world. To achieve this, I present Maria, a neural conversational agent which can effectively capture the appropriate visual commonsense from a large-scale image index and accordingly generate informative responses. (keywords: Multimodal BERT, Transformer, NLG)
- *EMNLP 2021* My another research topic is how to recommend proper items to users through natural conversations, which is called the Recommender Dialogue System. To achieve this, I present a novel framework named NTRD that decouples the response generation from the item recommendation via a two-stage strategy. The approach combines the strengths of both classical slot filling approaches (controllable) and modern neural NLG approaches (natural). (keywords: two-stage framework, OOV NLG)

Sun Yat-Sen University Guangzhou, China
MAVAI Lab, Supervised by Prof. Haifeng Hu *Sept. 2019 - present*

- Visual Question Answering has been shown to contain lot of unwanted biases, that enables models to reach high accuracy, but fail to answer for the right reasons. My goal is to study the techniques to effectively alleviate the influence of language bias problem on VQA tasks.
- *SIGIR 2021* Sepecifically, I proposed a generic training method named LPF for overcoming language priors in VQA. The LPF assigns a dynamic weight to each training sample and reshapes the total VQA loss to a more balanced form through leveraging a bias measurement model branch. This approach enables the existing VQA models to learn from both visual and language modalities evenly rather than biasing to the language modality. (keywords: bias modeling, re-weighting, OOD generalization)
- *EMNLP 2020* From the perspective of training data, I introduce a self-supervised contrastive learning mechanism to learn the counterfactual samples, which enables to fully utilize the supervision information of synthesized counterfactual samples. The solution firstly prove the effectiveness of contrastive mechanism on counterfactual learning, and hence improves the reasoning ability and robustness of the VQA models. (keywords: self-supervised learning, contrastive counterfactual learning)

Alibaba Beijing, China
Ads Algorithm Engineer Intern *June 2021 - Sept. 2021*

- This group mainly investigates the AI techniques for Computational Ads in the E-commerce business.
- My job is to develop automatic biding mechanism/strategy/model for advertisers. I build the Click Quality Model (CQM) to mitigate the sparsity problem of the pCVR calibration.

HUAWEI Shenzhen, China
Software Development Engineer Intern *June 2018 - Aug. 2018*

- My job is to optimize the troubleshooting engine of HUAWEI's cellphones to obtain more accurate failure detection results and maintenance advice.

AWARDS AND HONORS

1. Offered an ACM SIGIR 2021 Student Travel Grant, Canada
2. ICCV 2019 Wider Challenge Track Four, invited for poster demonstration, Rank 5th, Korea [leaderboard]
3. Academic Excellence ScholarShip, SYSU, 2020-2021, China
4. Outstanding Graduate Award, WHUT, 2019, China
5. National University Student Science Contest on Energy Saving & Emission Reduction, 3rd Prize, China

PROFESSIONAL SERVICES

Program Committee: NLPCC 2021; **Sub-Reviewer:** IJCAI 2021

SKILLS

Coding:
Python, C/C++, Linux, Pytorch, Tensorflow, Latex

Languages:
English (Fluent), Chinese (Native Speaker), Cantonese (Native Speaker)

MISCELLANOUS

I'm a big fan of basketball/NBA. I am impressed by the application progress of AI in basketball, such as the HomeCourt APP. I also love traveling, hiking, and other outdoor events. Silicon Valley is the funniest TV series I have ever watched. Codes for my published papers are available on my GitHub (400+ stars, 32 followers).