Yibing Liu

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Github | Homepage | Google Scholar

Education

- **City University of Hong Kong** — Hong Kong
  Doctor of Philosophy (Ph.D.), Computer Science — *Jul. 2021 - Now*
  - Supervisor: Assistant Professor Shiqi Wang and Haoliang Li
- **Shandong University** — Qingdao, China
  Bachelor of Engineering (B.Eng.), Computer Science — *Sept. 2016 - Jun. 2020*
  - Supervisor: Professor Liqiang Nie
  - CGPA: 88/100 | Rank: 8/154 (5%)

Research Experience

- **Understanding and Alleviating Dimensional Collapse in Contrastive Learning**
  Postgraduate Research — *Oct. 2022 - present*
  - Presenting a theory of concept activation coverage to shed light on the optimization of dimensional collapse problem in contrastive learning.
- **Rethinking Invariant Feature Learning in Domain Generalization**
  Postgraduate Research — *Mar. 2022 - Sep. 2022*
  - Exploring the invariant feature learning from a neuron activation view.
  - Designing a concept-level contrastive learning approach to learn invariant features, which enhances the diversity of feature representations, and consistently improves model generalization capability.
- **Rethinking Attention Model Explainability**
  Postgraduate Research — *Jul. 2021 - Feb. 2022*
  - Presenting a new view, polarity consistency, for the evaluation of explanation faithfulness. Through the broad experimental sweep, this work highlights the current explainability of attention-based models, and further provides new criteria for the design of robust explanation methods.
- **Investigating Visual Question Answering (VQA)**
  Undergraduate Research — *Jan. 2019 - Jun. 2021*
  - Investigating the VQA models through language prior analysis and attention mechanism regularization.

Publications

- **Yibing Liu**, Chris Xing Tian, Haoliang Li, Shiqi Wang, "Generalization Beyond Feature Alignment: Concept Activation-Guided Contrastive Learning". arXiv preprint. (Under Review at CVPR 2023) PDF
- **Yibing Liu**, Haoliang Li, Yangyang Guo, Chenqi Kong, Jing Li, Shiqi Wang, "Rethinking Attention-Model Explainability through Faithfulness Violation Test". International Conference on Machine Learning (ICML), 2022. PDF & Code
- **Yibing Liu**, Yangyang Guo, Jianhua Yin, Xuemeng Song, Weifeng Liu, Liqiang Nie, Min Zhang, "Answer Questions with Right Image Regions: A Visual Attention Regularization Approach". ACM Transactions on Multimedia Computing, Communications, and Applications (ToMM), 2022. PDF & Code
- Yangyang Guo, Liqiang Nie, Yongkang Wong, **Yibing Liu**, Zhiyong Cheng, Mohan Kankanhalli, "A Unified End-to-End Retriever-Reader Framework for Knowledge-based VQA". ACM Multimedia (ACM MM), 2022. PDF & Code
- Yangyang Guo, Zhiyong Cheng, Liqiang Nie, **Yibing Liu**, Yinglong Wang, and Mohan Kankanhalli, "Quantifying and Alleviating the Language Prior Problem in Visual Question Answering". ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2019. (Oral) PDF & Code

Honors and Awards

- Institutional Research Tuition Scholarship at CityU (2022)
- Outstanding Graduate of Shandong University (2020)
- The First Prize Scholarship at Shandong University (Top 5%) (2017-2019)
- National Scholarship for Encouragement (2018)

Professional Services

- **Conference Reviewer**: ICML 2022, ACM Multimedia Workshop on MCFR 2022
- **Journal Reviewer**: ACM ToMM

Miscellaneous

- **Skills**: Python, C++, Pytorch
- **Research Interests**: Interpretability, Machine Learning, Domain Generalization
- **Languages**: English, Chinese (Native)