Yue Yang

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EDUCATION BACKGROUND

University of Pennsylvania   **Philadelphia, PA**
Department of Computer and Information Science (Penn NLP)   *Aug. 2020 - May. 2025*
Ph.D. in Computer and Information Science, advised by Dr. Chris Callison-Burch and Dr. Mark Yatskar.
Concentrate on the intersection area of Natural Language Processing (**NLP**) and Computer Vision (**CV**).

University of Pennsylvania   **Philadelphia, PA**
Department of Computer and Information Science (GRASP)   *Aug. 2018 - May. 2020*
Master of Science in Engineering in Robotics

Zhejiang University   **Hangzhou, China**
School of Energy Engineering   *Sept. 2014 - July. 2018*
Bachelor of Engineering in Mechanical Design and Manufacture and Automatization

RESEARCH INTERESTS

My current research focuses on applying the knowledge priors of large language models (LLMs) to various domains (images, videos, healthcare, Embodied AI, etc) to improve different aspects of AI systems, including:

- **Interpretability.** LLMs aid in constructing human-readable intermediate representations, such as concept bottlenecks, enabling the design of inherently interpretable models, thereby mitigating the black-box nature of deep learning.
- **Robustness.** By utilizing sparse natural language representations as input, models are less prone to overfitting on the spurious cues of in-domain training data (especially medical data), enhancing their robustness and out-of-domain generalization.
- **Controllability & Creativity.** Language interfaces in generative systems (3D scenes, motions, etc.) enable easier generation process control. Leveraging the extensive world knowledge of LLMs, these systems can produce customized and diverse outputs.

PUBLICATIONS

9. **Yue Yang***, Fan-Yun Sun*, Luca Weihs*, Eli Vanderbilt, Alvaro Herrasti, Winson Han, Jiajun Wu, Nick Haber, Ranjay Krishna, Lingjie Liu, Chris Callison-Burch, Mark Yatskar, Aniruddha Kembhavi, Christopher Clark. **Holodeck: Language Guided Generation of 3D Embodied AI Environments**. *Conference on Computer Vision and Pattern Recognition (CVPR), 2024.*

8. Tuhin Chakrabarty, Arkady Saakyan, Olivia Winn, Artemis Panagopoulou, **Yue Yang**, Marianna Apidianaki, Smaranda Muresan. **Large Language Models and Diffusion Models Co-Create Visual Metaphors**. *Findings of the Association for Computational Linguistics (ACL), 2023.*

7. **Yue Yang**, Artemis Panagopoulou, Shenghao Zhou, Daniel Jin, Chris Callison-Burch, Mark Yatskar. **Language in a Bottle: Language Model Guided Concept Bottlenecks for Interpretable Image Classification**. *Conference on Computer Vision and Pattern Recognition (CVPR), 2023.*

6. Li Zhang, Hainiu Xu, **Yue Yang**, Shuyan Zhou, Weiqiu You, Manni Arora, Chris Callison-Burch. **Causal Reasoning About Entities and Events in Procedural Texts**. *Findings of the European Chapter of the Association for Computational Linguistics (EACL), 2023.*

5. **Yue Yang**, Wenlin Yao, Hongming Zhang, Xiaoyang Wang, Dong Yu, Jianshu Chen. **Z-LaVI: Zero-**

Shot Language Solver Fueled by Visual Imagination. *Conference on Empirical Methods in Natural Language Processing (EMNLP), 2022.*

4. **Yue Yang***, Artemis Panagopoulou*, Marianna Apidianaki, Mark Yatskar and Chris Callison-Burch. **Visualizing the Obvious: A Concreteness-based Ensemble Model for Noun Property Prediction**. *Findings of the Empirical Methods in Natural Language Processing (EMNLP), 2022.*

3. **Yue Yang**, Joongwon Kim, Artemis Panagopoulou, Mark Yatskar, Chris Callison-Burch. **Induce, Edit, Retrieve: Language Grounded Multimodal Schema for Instructional Video Retrieval**. *Open-Domain Retrieval Under Multi-Modal Settings Workshop, CVPR 2022.*

2. Shuyan Zhou*, Li Zhang*, **Yue Yang**, Qing Lyu, Graham Neubig and Chris Callison-Burch. **Show Me More Details: Discovering Event Hierarchies from WikiHow**. *Annual Meeting of the Association for Computational Linguistics (ACL), 2022.*

1. **Yue Yang**, Artemis Panagopoulou, Qing Lyu, Li Zhang, Mark Yatskar, and Chris Callison-Burch. **Visual Goal-Step Inference using wikiHow**. *Conference on Empirical Methods in Natural Language Processing (EMNLP), 2021.*

PREPRINTS

IV. Yue Yang, Mona Gandhi, Yufei Wang, Yifan Wu, Michael S. Yao, James C. Gee, Chris Callison-Burch, Mark Yatskar. **A Textbook Remedy for Domain Shifts: Knowledge Priors for Medical Image Analysis**.

III. Yifan Wu, Yang Liu, **Yue Yang**, Michael S. Yao, Wenli Yang, Xuehui Shi, Lihong Yang, Dongjun Li, Yueming Liu, James C. Gee, Xuan Yang, Wen-bin Wei, Shi Gu. **A Concept-based Interpretable Model for the Diagnosis of Choroid Neoplasias using Multimodal Data**.

II. Yiming Huang, Weilin Wan, **Yue Yang**, Chris Callison-Burch, Mark Yatskar, Lingjie Liu. **CoMo: Controllable Motion Generation through Language Guided Pose Code Editing**.

I. Josh Magnus Ludan, Qing Lyu, **Yue Yang**, Liam Dugan, Mark Yatskar, Chris Callison-Burch. **Interpretable-by-Design Text Classification with Iteratively Generated Concept Bottleneck**.

PROFESSIONAL EXPERIENCE

PRIOR @ Allen Institute for AI   **Seattle, WA**
Research Intern (Outstanding Intern of the Year Award)   *May. 2023/2024 - Aug. 2023/2024*

Tencent AI Lab   **Seattle, WA**
Research Scientist Intern   *May. 2022 - Aug. 2022*

TEACHING EXPERIENCE

- <u>CIS-521</u> Artificial Intelligence (19fall, 20fall, 21summer, 21fall, 22spring, 22fall), Head TA.
- <u>CIS-530</u> Computational Linguistics (21spring), TA.

ACADEMIC SERVICE

- **Reviewer**: CVPR, ECCV, ACL, EMNLP, NAACL, EACL, COLM, TMLR.

SKILLS

- Programming languages: Python, Matlab, C, Bash, Coq.
- Machine learning libraries: PyTorch, TensorFlow, Keras, sci-kit-learn, NumPy.