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 Chris Callison-Burch and Mark Yatskar.
Concentrate on the intersection area of Natural Language Understanding(**NLU**) 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, GPA: 3.88/4.00.

Zhejiang University (ZJU) **Hangzhou, China**
School of Energy Engineering *Sept. 2014 - July. 2018*
Bachelor of Engineering in Mechanical Design and Manufacture and Automatization, GPA: 3.83/4.00.

PUBLICATIONS

- Shuyan Zhou*, Li Zhang*, **Yue Yang**, Qing Lyu, Graham Neubig and Chris Callison-Burch. **Show Me More Details: Discovering Event Hierarchies from WikiHow**. In submission to ACL.
- **Yue Yang**, Artemis Panagopoulou, Qing Lyu, Li Zhang, Mark Yatskar and Chris Callison-Burch. **Visual Goal-Step Inference using wikiHow**. *In Proceedings of EMNLP 2021*.

RESEARCH PROJECTS

Multimodal Schema Induction and Generalization **Philadelphia, PA**
***PhD Independent Study** [slides]* *Jan. 2021 - Present*

- Induce schemas (step-by-step instructions) of everyday tasks by learning from videos. For example, given a task "Bake Cake" and related videos, the system will output a directed graph as the schema, e.g., Gather ingredients –> Mix the ingredients –> Preheat Oven –> ... .
- Generalize existed schemas for unseen tasks using Wordnet, e.g., the schema "Bake Cake" could be applied to "Bake Cookies" since "Cake" and "Cookie" are close in the Wordnet.
- We could use the induced schema for downstream tasks such as long-term video retrieval.

Alexa Taskbot Challenge (Team Quakerbot-UPenn) **Philadelphia, PA**
***Sponsored by Amazon** [demo]* *July. 2021 - Present*

- We are developing a customer-facing dialog agent (Alexa Taskbot) that helps users do household tasks, one of the first attempts to apply procedural knowledge to products at scale.
- The steps can also be represented as images or videos, and thus, multimodal dialogs are made possible by, for example, showing users instructional videos.
- We combine wikiHow and GTP3 into a general QA module by retrieving paragraphs in wikiHow related to the question and feed them as context to GPT3 to generate a more sensible response.

Discovering Hierarchies of Procedures from Semi-structured Web Data **Philadelphia, PA**
***Collabrate with CMU, supervised by Graham Neubig** [website]* *May. 2021 - Sept. 2021*

- Procedures are inherently hierarchical. For example, to "host a party", one may need to "clean the house", which in turn may require "put away the clothes".

- We link steps to other wikiHow articles with high precision and recall by exploring various approaches based on semantic similarity, allowing for hierarchical lookups.
- Our hierarchy is shown via crowdsourcing to help users accomplish tasks and improves performance in downstream tasks such as video retrieval.

Visual Goal-Step Inference using wikiHow **Philadelphia, PA**
PhD Independent Study *[paper] [slides] [dataset]* *Oct. 2020 - May. 2021*

- Understanding what sequence of steps is needed to complete a goal can help artificial intelligence systems reason about human activities.
- We propose the VGSI task where a model is given a textual goal and infer which image represents a plausible step towards that goal. For example, given an image about "turning on the oven", the model needs to infer it is related to the goal "Bake Fish".
- We construct a new dataset harvested from wikiHow consisting of 770K images representing human actions. The multimodal representation learned from our data can be effectively transferred to other datasets like HowTo100m.

PROFESSIONAL EXPERIENCE

University of Pennsylvania/Coursera **Philadelphia, PA**
Associate Instructor for Online Courses *Sept. 2020 - Present*

- Develop an Artificial Intelligence course on Coursera.
- Over 200 students enrolled in the 2021 fall semester.
- Design the R2D2 projects such as obstacle avoidance, AR path planning, mask detection, etc.

TEACHING EXPERIENCE

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

AWARDS & ACHIEVEMENTS

- SEAS Outstanding Teaching Award, UPenn *May. 2020*
- Elite Liu Yongling Scholarship, offered by Hong Kong Elite Industrial Development Group Co., Ltd. (1/224) *Aug. 2017*
- Second-Class Scholarship for Outstanding Merits (Academic Year 2016-2017), ZJU *Sept.2017*
- Official Delegate of 32nd Student Congress, ZJU *Jun.2017*
- Third-Class Scholarship for Outstanding Merits (Academic Year 2015-2016), ZJU *Sept.2016*

SKILLS

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