Yuan Yang

GENERAL INFORMATION

Tel: 412-623-9464   Email: yyang754@gatech.edu
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EDUCATION

Georgia Institute of Technology   Atlanta, GA
Ph.D. Machine Learning, College of Computing   2018-Present

Carnegie Mellon University   Pittsburgh, PA
M.S. Computational Data Science, School of Computer Science   2016-2017

Beihang University   Beijing, Beijing
B.Eng. Software Engineering, School of Software Engineering   2012-2016

RESEARCH INTEREST

My research focuses on developing controllable, interpretable, and data-efficient ML models via logic reasoning.

- I study fundamental problems of performing inductive and deductive logic reasoning on knowledge graphs and have proposed several differentiable graph reasoning models.

- I also proposed several frameworks that utilize logic reasoning for automatic data labeling and adversarial defense for vision models.

- My recent research focuses on incorporating logic reasoning into large language models for controllable and grounded text generation.

Research topics: knowledge graph, logic reasoning, NLP, and large language models

RESEARCH EXPERIENCE

Georgia Institute of Technology
SPC Lab, PhD student advised by Faramarz Fekri   2020-Present

- Studying interpretable models for graph and logic reasoning tasks.

- Incorporating logic reasoning into large language models for controllable and grounded text generation.

ML Group, PhD student advised by Le Song   2018-2020

- Studied GNN-/logic-based models for efficient graph reasoning.

Bloomberg, AI Group   2022-2022
AI research intern

- Proposed an auto data labeling framework for sample-efficient text classification model evaluation.

Amazon, Product Graph Team   2020-2021
Research intern advised by Luna Dong

- Proposed a logic-based model for weakly-supervised entity linkage on massive knowledge graphs.

Petuum, Medical Group   2017-2018
Research scientist

- Developed a text CNN-based model that predicts discharge medication from patient medical records.

Carnegie Mellon University   2017-2017
TREC 2017, team leader advised by Eric Nyberg

- Developed a graph-based QA system for real-time consumer health QA.

SenseTime, Speech Group   2016
Research & development intern

- Implemented/fine-tuned Baidu Deep Speech 2 model.

Rochester University, The Computation and Language Lab 2015-2016
Research intern advised by Steven Piantadosi
- Proposed a Bayesian model for human language learning simulation.

Tsinghua University, Statistical AI & Learning Group 2014-2016
Research intern advised by Jun Zhu
- Proposed a distributed sampling framework for large-scale LDA inference.

SELECTED
PUBLICATIONS

- Y. Yang, S. Xiong, A. Payani, E. Shareghi and F. Fekri. Harnessing the Power of Large Language Models for Natural Language to First-Order Logic Translation. *arXiv preprint arXiv:2305.15541, 2023.*

1 Y. Yang, S. Xiong, F. Fekri, J. C. Kerce, and A. Payani. LogicDP: Creating Labels for Graph Data via Inductive Logic Programming, *11th International Conference on Learning Representations* (ICLR 2023).

2 Y. Yang, S. Xiong, J. C. Kerce, and F. Fekri. Temporal inductive logic reasoning, *arXiv preprint arXiv:2206.05051, 2022.*

3 Y. Yang, J. C. Kerce, and F. Fekri. LogicDef: An Interpretable Defense Framework Against Adversarial Examples via Inductive Scene Graph Reasoning. *Thirty-Sixth AAAI Conference on Artificial Intelligence* (AAAI 2022), **oral presentation**.

4 Y. Yang, and S. T. Piantadosi. One model for the learning of language. *Proceedings of the National Academy of Sciences Feb 2022, 119 (5)* (PNAS).

6 Y. Yang, and L. Song. Learn to Explain Efficiently via Neural Logic Inductive Learning, *8th International Conference on Learning Representations* (ICLR 2020).

7 Y. Zhang*, X. Chen*, Y. Yang*, A. Ramamurthy, B. Li, Y. Qi, and L. Song. Efficient Probabilistic Logic Reasoning with Graph Neural Networks, *8th International Conference on Learning Representations* (ICLR 2020).

8 X. Si*, Y. Yang*, H. Dai, M. Naik, and L. Song. Learning a Meta-Solver for Syntax-Guided Program Synthesis, *7th International Conference on Learning Representations* (ICLR 2019).

9 Y. Yang, P. Xie, X. Gao, C. Cheng, C. Li, H. Zhang and E. Xing. Predicting Discharge Medications at Admission Time Based on Deep Learning, *arXiv preprint arXiv:1711.01386, 2017.*

10 Y. Yang, J. Yu, Y. Hu, X. Xu and E. Nyberg. A Consumer Health Question Answering System, *Text Retrieval Conference 2017 LiveQA Medical Track* (TREC 2017).

11 Y. Yang, J. Chen and J. Zhu. Distributing the Stochastic Gradient Sampler for Large-Scale LDA, *22nd Conference on Knowledge Discovery and Data Mining* (KDD 2016).

AWARDS
- 3$^{\text{rd}}$ Place in TREC 2017 LiveQA Competition. 2017
- 1$^{\text{st}}$ Prize in Undergrad. Mathematical Contest in Modeling, CSIAM. 2014
- 2$^{\text{nd}}$ Prize in Imagine Cup 2014 Chinese Region, Microsoft. 2014
- National Scholarship, Beihang University. 2014

TEACHING
- Teaching Assistant, Fall 2020, CSE 6040, Computing for Data Analysis: Methods and Tools. 2020
- Teaching Assistant, Spring 2019, CSE 6740, Computational Data Analysis. 2019
- Seminar Lecturer, VR and Matrix application Lab, Beihang University. 2013-2015

PROFESSIONAL
SERVICE
- Program Committee/Reviewer: ICML 20/21/22/23, NIPS 20/21/22/23, ICLR 21/22/23, IJICAI 21/22/23, AAAI 23/24

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*Equal contribution