

Shengyu Feng

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GHC 5545, 5000 Forbes Avenue, Pittsburgh, PA, 15213-8213

Research Interests I am generally interested in applying machine learning to math problem solving, particularly in combinatorial optimization. The methods I focus on include statistical sampling, reinforcement learning, and Large Language Model reasoning.

Education **Carnegie Mellon University (CMU)** Pittsburgh, PA, U.S.
Ph.D., Language Technology Institute: GPA: 4.04/4.30 Aug. 2022 – Present
Advisor: Dr. Yiming Yang

University of Illinois at Urbana-Champaign (UIUC) Champaign, IL, U.S.
M.S., Computer Science: GPA: 3.91/4.00 Aug. 2020 – May 2022
Advisor: Dr. Hanghang Tong

University of Michigan (UMich) Ann Arbor, MI, U.S.
B.S.E., Computer Science: GPA: 4.00/4.00 Sep. 2018 – May 2020

Shanghai Jiao Tong University (SJTU) Shanghai, China
B.S., Electrical and Computer Engineering: GPA: 3.67/4.00 Sep. 2016 – Aug. 2020

Research Internship **Apple** Seattle, WA, U.S.
Research intern May 2024 - Aug. 2024

Microsoft Research Bellevue, WA, U.S.
Research intern May 2022 - Aug. 2022

Intel AI Lab Remote
Graduate technical intern May 2021 - Aug. 2021

Publications **CO-Bench: Benchmarking Language Model Agents in Algorithm Search for Combinatorial Optimization**
Weiwei Sun*, Shengyu Feng*, Shanda Li and Yiming Yang
Under Review

Regularized Langevin Dynamics for Combinatorial Optimization
Shengyu Feng, Yiming Yang
Under Review

Sampling-Enhanced Large Neighborhood Search for Solving Integer Linear Programs

Shengyu Feng, Zhiqing Sun and Yiming Yang

Under Review

Step-by-Step Reasoning for Math Problems via Twisted Sequential Monte Carlo

Shengyu Feng, Xiang Kong, Shuang Ma, Aonan Zhang, Dong Yin, Chong Wang, Ruoming Pang and Yiming Yang

International Conference on Learning Representations (ICLR), 2025

SORREL: Suboptimal-Demonstration-Guided Reinforcement Learning for Learning to Branch

Shengyu Feng, Yiming Yang

AAAI Conference on Artificial Intelligence (AAAI), 2025 (Oral, 6% of submissions)

ARIEL: Adversarial Graph Contrastive Learning

Shengyu Feng, Baoyu Jing, Yada Zhu and Hanghang Tong

ACM Transactions on Knowledge Discovery from Data (TKDD)

Concept Discovery for Fast Adaptation

Shengyu Feng, Hanghang Tong

SIAM International Conference on Data Mining (SDM), 2023

Exploiting Long-Term Dependencies for Generating Dynamic Scene Graphs

Shengyu Feng, Subarna Tripathi, Hesham Mostafa, Marcel Nassar and Somdeb Majumdar

IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2023

X-GOAL: Multiplex Graph Prototypical Contrastive Learning

Baoyu Jing, Shengyu Feng, Yuejia Xiang, Xi Chen, Yu Chen and Hanghang Tong

ACM International Conference on Information and Knowledge Management (CIKM), 2022

Adversarial Graph Contrastive Learning with Information Regularization

Shengyu Feng, Baoyu Jing, Yada Zhu and Hanghang Tong

ACM Web Conference (WWW), 2022

Batch Reinforcement Learning Through Continuation Method

Yijie Guo, Shengyu Feng, Nicolas Le Roux, Ed Chi, Honglak Lee and Minmin Chen
International Conference on Learning Representations (ICLR), 2021

Memory Based Trajectory-conditioned Policies for Learning from Sparse Rewards

Yijie Guo, Jongwook Choi, Marcin Moczulski, Shengyu Feng, Samy Bengio, Mohammad Norouzi and Honglak Lee
Neural Information Processing Systems (NeurIPS) 2020

Honors & Awards	Siebel Scholars for class 2022 (UIUC)	2021
	University Merit Student (SJTU)	2017, 2018
	Interdisciplinary Contest in Modeling Meritorious Winner	2017
	Dean's List (UMich, SJTU)	Every semester

Teaching Experiences	Teaching Assistant, CMU	Fall 2024
	11441/11741: Machine Learning with Graphs Instructor: Yiming Yang	

Teaching Assistant, UIUC	Spring 2021, Fall 2020
CS 445: Computational Photography Instructor: Derek Hoime	

Instructional Aide, UMich	Winter 2020, Fall 2019
EECS 442: Computer Vision Instructor: Justin Johnson (Winter 2020), David Fouhey (Fall 2019)	

Professional Services	Reviewer, <i>International Conference on Learning Representations (ICLR)</i>	2022-2024
	Reviewer, <i>Neural Information Processing Systems (NeurIPS)</i>	2021-2024
	Reviewer, <i>International Conference on Machine Learning (ICML)</i>	2022-2024

Skills	Programming languages: Python, C/C++, Javascript, Java, R and Matlab
	Deep learning frameworks: PyTorch, Tensorflow and Pytorch Geometric