

# SHENGYU FENG

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Homepage: <https://shengyu-feng.github.io>

Google Scholar ◊ Github ◊ LinkedIn

## EDUCATION

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### Carnegie Mellon University (CMU)

*Aug. 2022 – Present*

Ph.D. in Language and Information Technology, GPA: 4.03/4.30

Advisor: Yiming Yang

### University of Illinois at Urbana-Champaign (UIUC)

*Aug. 2020 – May 2022*

M.S. in Computer Science, GPA: 3.91/4.00

Advisor: Hanghang Tong

### University of Michigan (UM)

*Aug. 2018 – May 2020*

B.S.E in Computer Science, GPA: 4.00/4.00

### Shanghai Jiao Tong University (SJTU)

*Sep. 2016 – Aug. 2020*

B.S in Electrical and Computer Engineering, GPA: 3.67/4.00

## RESEARCH INTERESTS

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My research focuses on **discrete generative models** and **combinatorial optimization**, with application to text and graph data.

In addition, I apply machine learning to high-performance computing optimization. My earlier work spans information extraction, graph representation learning, and reinforcement learning.

## WORK EXPERIENCE

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### Meta Superintelligence Labs

*May 2025 – Aug. 2025*

Research Intern

### Apple Foundation Model Team

*May 2024 – Aug. 2024*

Research Intern

### Microsoft Research

*May 2022 – Aug. 2022*

Research Intern

### Intel AI Lab

*May 2021 – Aug. 2021*

Graduate Research Intern

## PUBLICATIONS (GROUPED BY RESEARCH AREAS)

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### Large Language Model

[20] Dual-Weighted Reinforcement Learning for Generative Preference Modeling. **Shengyu Feng**, Yun He, Shuang Ma, Beibin Li, Yuanhao Xiong, Vincent Li, Karishma Mandyam, Julian Katz-Samuels, Shengjie Bi, Licheng Yu, Hejia Zhang, Karthik Abinav Sankararaman, Han Fang, Riham Mansour, Yiming Yang, and Manaal Faruqui. *Preprint*.

[19] CO-Bench: Benchmarking Language Model Agents in Algorithm Search for Combinatorial Optimization. Weiwei Sun\*, **Shengyu Feng\***, Shanda Li, and Yiming Yang. *Preprint*.

[18] 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.

## Combinatorial Optimization

[17] A Comprehensive Evaluation of Contemporary ML-Based Solvers for Combinatorial Optimization. **Shengyu Feng\***, Weiwei Sun\*, Shanda Li, Ameet Talwalkar, and Yiming Yang. *AI for Math Workshop (AIMATH)*, *ICML 2025*.

[16] Regularized Langevin Dynamics for Combinatorial Optimization. **Shengyu Feng** and Yiming Yang. *International Conference on Machine Learning (ICML)*, 2025.

[15] SORREL: Suboptimal-Demonstration-Guided Reinforcement Learning for Learning to Branch. **Shengyu Feng** and Yiming Yang. *AAAI Conference on Artificial Intelligence (AAAI)*, 2025 (*Oral, 6% of submissions*)

## High-Performance Computing Optimization

[14] Machine Learning-Driven Predictive Resource Management in Complex Science Workflows. Tasnuva Chowdhury, Tadashi Maeno, Fatih Furkan Akman, Joseph Boudreau, Sankha Dutta, **Shengyu Feng**, Adolfo Hoisie, Kuan-Chieh Hsu, Raees Khan, Jaehyung Kim, Ozgur O. Kilic, Scott Klasky, Alexei Klimentov, Tatiana Korchuganova, Verena Ingrid Martinez Outschoorn, Paul Nilsson, David K. Park, Norbert Podhorszki, Yihui Ren, John Rembrandt Steele, Frédéric Suter, Sairam Sri Vatsavai, Torre Wenaus, Wei Yang, Yiming Yang, and Shinjae Yoo. *Preprint*.

[13] Error Analysis of Globally Distributed Workflow Management System. Sankha Dutta, Ozgur O. Kilic, Tatiana Korchuganova<sup>1</sup>, Paul Nilsson, Sairam Sri Vatsavai, Kuan-Chieh Hsu, David K. Park, Joseph Boudreau, Tasnuva Chowdhury, **Shengyu Feng**, Raees Khan, Jaehyung Kim, Scott Klasky, Tadashi Maeno, Verena Ingrid Martinez Outschoorn, Norbert Podhorszki, Yihui Ren, Frédéric Suter, Wei Yang, Yiming Yang, Shinjae Yoo, Alexei Klimentov, and Adolfo Hoisie. *Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware (IPDRM)*. *SC 2025*.

[12] Data Management System Analysis for Distributed Computing Workloads. Kuan-Chieh Hsu, Sairam Sri Vatsavai, Ozgur O. Kilic, Tatiana Korchuganova, Paul Nilsson, Sankha Dutta, Yihui Ren, David K. Park, Joseph Boudreau, Tasnuva Chowdhury, **Shengyu Feng**, Raees Khan, Jaehyung Kim, Scott Klasky, Tadashi Maeno, Verena Ingrid Martinez Outschoorn, Norbert Podhorszki, Frédéric Suter, Wei Yang, Yiming Yang, Shinjae Yoo, Alexei Klimentov, and Adolfo Hoisie. *Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD)*, *SC 2025*.

[11] CGSim: A Simulation Framework for Large Scale Distributed Computing Environment. Sairam Sri Vatsavai, Raees Khan, Kuan-Chieh Hsu, Ozgur O. Kilic, Paul Nilsson, Tatiana Korchuganova, David K. Park, Sankha Dutta, Yihui Ren, Joseph Boudreau, Tasnuva Chowdhury, **Shengyu Feng**, Jaehyung Kim, Scott Klasky, Tadashi Maeno, Verena Ingrid Martinez, Norbert Podhorszki, Frédéric Suter, Wei Yang, Yiming Yang, Shinjae Yoo, Alexei Klimentov, and Adolfo Hoisie. *Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS)*, *SC 2025*.

[10] Alternative Mixed Integer Linear Programming Optimization for Joint Job Scheduling and Data Allocation in Grid Computing. **Shengyu Feng\***, Jaehyung Kim\*, Yiming Yang, Joseph Boudreau, Tasnuva Chowdhury, Adolfo Hoisie, Raees Khan, Ozgur O. Kilic, Scott Klasky, Tatiana Korchuganova, Paul Nilsson, Verena Ingrid Martinez Outschoorn, David K. Park, Norbert Podhorszki, Yihui Ren, Frederic Suter, Sairam Sri Vatsavai, Wei Yang, Shinjae Yoo, Tadashi Maeno, and Alexei Klimentov. *Future Generation Computer Systems (FGCS)*.

[9] AI Surrogate Model for Distributed Computing Workloads. David K. Park, Yihui Ren, Ozgur O. Kilic, Tatiana Korchuganova, Sairam Sri Vatsavai, Joseph Boudreau, Tasnuva Chowdhury, **Shengyu**

**Feng**, Raees Khan, Jaehyung Kim, Scott Klasky, Tadashi Maeno, Paul Nilsson, Verena Ingrid Martinez Outschoorn, Norbert Podhorszki, Frederic Suter, Wei Yang, Yiming Yang, Shinjae Yoo, Alexei Klimentov, and Adolfo Hoesie. *Workshop on Artificial Intelligence and Machine Learning for Scientific Applications (AI4S), SC 2024*.

## Information Extraction

- [8] Concept Discovery for Fast Adaptation. **Shengyu Feng** and Hanghang Tong. *SIAM International Conference on Data Mining (SDM)*, 2023.
- [7] 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.
- [6] Coreference by appearance: Visually Grounded Event Coreference Resolution. Liming Wang, **Shengyu Feng**, Xudong Lin, Manling Li, Shih-Fu Chang, and Heng Ji. *Workshop on Computational Models of Reference, Anaphora and Coreference (CRAC), EMNLP 2021*.

## Graph Representation Learning

- [5] ARIEL: Adversarial Graph Contrastive Learning. **Shengyu Feng**, Baoyu Jing, Yada Zhu, and Hanghang Tong. *ACM Transactions on Knowledge Discovery from Data (TKDD)*.
- [4] 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.
- [3] Adversarial Graph Contrastive Learning with Information Regularization. **Shengyu Feng**, Baoyu Jing, Yada Zhu, and Hanghang Tong *ACM Web Conference (WWW)*, 2022.

## Reinforcement Learning

- [2] 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.
- [1] 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

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OpenAI Researcher Access Program Grant	2025
Siebel Scholars for class 2022, UIUC	2021
University Merit Student, SJTU	2017, 2018
Interdisciplinary Contest in Modeling (ICM) Meritorious Winner	2017

## TEACHING EXPERIENCE

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<b>Teaching Assistant, CMU</b>	<i>Fall 2024, Fall 2025</i>
11441/11741: Machine Learning with Graphs	
Instructor: Yiming Yang	
<b>Teaching Assistant, UIUC</b>	<i>Fall 2020, Spring 2021</i>
CS 445: Computational Photography	
Instructor: Derek Hoiem	

**Instructional Aide, UM**

EECS 442: Computer Vision

Instructor: David Fouhey (Fall 2019) and Justin Johnson (Winter 2020)

*Fall 2019, Winter 2020***PROFESSIONAL SERVICE**

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Organizer, CMU LLM Agent Workshop	<i>2025</i>
Reviewer, Neural Information Processing Systems (NeurIPS)	<i>2021 – 2025</i>
Reviewer, International Conference on Machine Learning (ICML)	<i>2022 – 2025</i>
Reviewer, International Conference on Learning Representations (ICLR)	<i>2022 – 2024</i>

**INVITED TALKS**

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<b>Regularized Langevin Dynamics for Combinatorial Optimization</b>	<i>Oct. 2025</i>
2025 INFORMS Annual Meeting, oral presentation	
<b>Benchmarking LLM Agents in Algorithm Search</b>	<i>April 2025</i>
Massachusetts Institute of Technology (MIT), invited benchmark talk	

**LEADERSHIP & ENGAGEMENT**

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Graduate Student Assembly Representative, CMU	<i>2023 – Present</i>
Member of Campus Affair Committee, CMU	<i>2023 – 2025</i>
Member of UM-SJTU Alumni Association, SJTU	<i>2017 – 2020</i>