SHENGYU FENG

Homepage: `https://shengyu-feng.github.io`
Google Scholar ⋄ Github ⋄ LinkedIn

EDUCATION

Carnegie Mellon University (CMU) *Aug. 2022 – Present*
Ph.D. in Language and Information Technology, GPA: 4.06/4.30
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

My research focuses on **discrete optimization, generative models, and reinforcement learning**, particularly for language modeling and NP-hard combinatorial problems. I am also broadly interested in AI for mathematics and AI for science.

WORK EXPERIENCE

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)

Large Language Model

[23] Rubric-Based Benchmarking and Reinforcement Learning for Advancing LLM Instruction Following. Yun He*, Wenzhe Li*, Hejia Zhang, Songlin Li, Karishma Mandyam, Sopan Khosla, Yuanhao Xiong, Nanshu Wang, Selina Peng, Beibin Li, Shengjie Bi, Shishir G. Patil, Qi Qi, **Shengyu Feng**, Julian Katz-Samuels, Richard Yuanzhe Pang, Sujan Gonugondla, Hunter Lang, Yue Yu, Yundi Qian, Maryam Fazel-Zarandi, Licheng Yu, Amine Benhalloum, Hany Awadalla, and Manaal Faruqui. *Annual Meeting of the Association for Computational Linguistics (ACL), 2026.*

[22] Bradley-Terry Policy Optimization 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, Yiming Yang, and Manaal Faruqui. *Preprint.*

[21] CO-Bench: Benchmarking Language Model Agents in Algorithm Search for Combinatorial Optimization. Weiwei Sun*, **Shengyu Feng***, Shanda Li, and Yiming Yang. *AAAI Conference on Artificial Intelligence (AAAI)*, 2026.

[20] 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

[19] Unsupervised Diffusion Solver for Combinatorial Optimization via Combinatorial Adjoint Matching. **Shengyu Feng**, Tarun Suresh, and Yiming Yang. *International Conference on Machine Learning (ICML), 2026.*

[18] Unsupervised Neural Langevin Sampler for Mixed Integer Linear Programming. Yixin Huang, **Shengyu Feng**, and Yiming Yang. *International Conference on Machine Learning (ICML), 2026.*

[17] FrontierCO: Real-World and Large-Scale Evaluation of Machine Learning Solvers for Combinatorial Optimization. **Shengyu Feng***, Weiwei Sun*, Shanda Li, Ameet Talwalker, and Yiming Yang. *International Conference on Learning Representations (ICLR), 2026.*

[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).*

Distributed Computing

[14] Machine Learning-Driven Predictive Resource Management in Complex Science Workflows. Tasnuva Chowdhury, Tadashi Maeno, Fatih Furkan Akman, Joseph Boudreau, Sankha Dutta, **Shengyu Feng**, Adolfy 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. *International Journal of Modern Physics A (IJMPA).*

[13] Error Analysis of Globally Distributed Workflow Management System. Sankha Dutta, Ozgur O. Kilic, Tatiana Korchuganova, 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 Adolfy Hoisie. *Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware (IPDRM), SC25.*

[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 Adolfy Hoisie. *Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD), SC25.*

[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 Adolfy Hoisie. *Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS), SC25 (Best short paper award).*

[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, Adolfy Hoisie, Raees Khan, Ozgur O. Kilic, Scott Klasky, Tatiana Korchuganova, Paul Nilsson, Verena Ingrid Martinez Outschoorn, David K. Park, Norbert Podhorszki, Yihui Ren, Frédéric 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, Frédéric Suter, Wei Yang, Yiming Yang, Shinjae Yoo, Alexei Klimentov, and Adolfy Hoisie. *Workshop on Artificial Intelligence and Machine Learning for Scientific Applications (AI4S), SC24.*

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

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

Teaching Assistant, CMU *Fall 2024, Fall 2025*
11441/11741: Machine Learning with Graphs
Instructor: Yiming Yang

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

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

PROFESSIONAL SERVICE

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

INVITED TALKS

Regularized Langevin Dynamics for Combinatorial Optimization *Oct. 2025*
2025 INFORMS Annual Meeting, oral presentation

Benchmarking LLM Agents in Algorithm Search *April 2025*
Massachusetts Institute of Technology (MIT), invited benchmark talk

LEADERSHIP & ENGAGEMENT

Graduate Student Assembly Representative, CMU *2023 – 2026*
Member of Campus Affair Committee, CMU *2023 – 2025*
Member of UM-SJTU Alumni Association, SJTU *2017 – 2020*