Yang Li

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Education

Shanghai Jiao Tong University (SJTU), Shanghai, China   Sep. 2022 – Present

Master, Department of Computer Science and Engineering, Supervisor: Junchi Yan

- GPA: 3.83/4.0. Rank Reference: 3 out of 211 achieving the Graduate National Scholarship
- Courses: 90.0% at A level

Shanghai Jiao Tong University (SJTU), Shanghai, China   Sep. 2018 – Jul. 2022

Bachelor, School of Cyber Science and Engineering

- GPA: 91.03/100 (or 3.93/4.3), Rank: 3/129
- Foundation Courses: 73.33% above A, 40.00% above A+
- Subject Courses: 80% above A, 50.00% above A+

Publications

First-authored Publications (in Chronological Order):

- **MixSATGEN: Learning Graph Mixing for SAT Instance Generation**
  Xinyan Chen*, Yang Li*, Runzhong Wang, Junchi Yan (*: equal contribution)
  International Conference on Learning Representations, ICLR 2024
- **T2T: From Distribution Learning in Training to Gradient Search in Testing for Combinatorial Optimization**
  Yang Li, Jinpei Guo, Runzhong Wang, Junchi Yan
  Advances in Neural Information Processing Systems, NeurIPS 2023
- **HardSATGEN: Understanding the Difficulty of Hard SAT Formula Generation and A Strong Structure-Hardness-Aware Baseline**
  Yang Li, Xinyan Chen, Wenxuan Guo, Xijun Li, Wanqian Luo, Junhua Huang, Hui-Ling Zhen, Mingxuan Yuan, Junchi Yan
  SIGKDD Conference on Knowledge Discovery and Data Mining, KDD 2023
- **IID-GAN: an IID Sampling Perspective for Regularizing Mode Collapse**
  Yang Li*, Liangliang Shi*, Junchi Yan (*: equal contribution)
  International Joint Conference on Artificial Intelligence, IJCAI 2023
- **Improving Generative Adversarial Networks via Adversarial Learning in Latent Space**
  Yang Li, Yichuan Mo, Liangliang Shi, Junchi Yan
  Advances in Neural Information Processing Systems, NeurIPS 2022 (Spotlight Top 5%)
- **Kissat_Adaptive_Restart, Kissat_Cfexp: Adaptive Restart Policy and Variable Scoring Improvement**
  Yang Li, Yuqi Jia, Wanqian Luo, Hui-Ling Zhen, Xijun Li, Mingxuan Yuan, Junchi Yan
  Proceedings of SAT Competition 2022
- **The SAT Encoding for Graph Isomorphism**
  Yang Li, Yuqi Jia, Wanqian Luo, Hui-Ling Zhen, Xijun Li, Mingxuan Yuan, Junchi Yan
  Proceedings of SAT Competition 2022

Other (in Chronological Order):

- **Understanding and Recomposing the Learning and Searching Techniques in ML4CO: A Deep Dive into the TSP Case**
  Yang Li, Jiale Ma, Wenzheng Pan, Runzhong Wang, Haoyu Geng, Nianzu Yang, Junchi Yan
  In submission, 2024
- **ACM-MILP: Adaptive Constraint Modification via Grouping and Selection for Hardness-Preserving MILP Instance Generation**
  Ziao Guo, Yang Li, Chang Liu, Wenli Ouyang, Junchi Yan
  In submission, 2024

- **General Neural Combinatorial Optimization with Problem Instance Reduction**
  Hao Xiong, Wenzheng Pan, Wentao Zhao, Yang Li, Qitian Wu, Zhuo Xia, Junchi Yan
  In submission, 2024
- **Machine Learning Insides OptVerse AI Solver: Design Principles and Applications**
  Xijun Li, Fangzhou Zhu, Hui-Ling Zhen, Weilin Luo, Meng Lu, Yimin Huang, Zhenan Fan, Zirui Zhou, Yufei Kuang, Zhihai Wang, Zijie Geng, Yang Li, Haoyang Liu, Zhiwu An, Muming Yang, Jianshu Li, Jie Wang, Junchi Yan, Defeng Sun, Tao Zhong, Yong Zhang, Jia Zeng, Mingxuan Yuan, Jianye Hao, Jun Yao, Kun Mao
  arXiv preprint, 2024
- **Molecule Generation for Drug Design: a Graph Learning Perspective**
  Nianzu Yang, Huaijin Wu, Kaipeng Zeng, Yang Li, Junchi Yan
  arXiv preprint, 2024 (in submission)
- **Rethinking and Benchmarking Predict-then-Optimize Paradigm for Combinatorial Optimization Problems**
  Haoyu Geng, Han Ruan, Runzhong Wang, Yang Li, Yang Wang, Lei Chen, Junchi Yan
  arXiv preprint, 2023 (in submission)
- **The Policy-gradient Placement and Generative Routing Neural Networks for Chip Design**
  Ruoyu Cheng, Xianglong Lyu, Yang Li, Junjie Ye, Jianye Hao, Junchi Yan
  Advances in Neural Information Processing Systems, NeurIPS 2022

Experience

ThinkLab, Shanghai Jiao Tong University, Shanghai, China   Jul. 2021 – Present

Researcher   Supervisor: Prof. Junchi Yan

See Publications for research outputs.

- Undergraduate researcher and master researcher, having published **5 first-authored papers** in top-tier ML conferences to date.
- My research interests lie in **machine learning for combinatorial optimization and generative models.**
- We maintain a list of resources that utilize machine learning technologies to solve combinatorial optimization problems in **awesome-ml4co** (`https://github.com/Thinklab-SJTU/awesome-ml4co`). The repository covers the learning-based efforts for 34 different combinatorial optimization problems and includes over 300 papers in the ML4CO community. The repository has gained over 1,000 stars on GitHub.

Learning Optimization Solver Project, with **Huawei Noah's Ark Lab**   Apr. 2022 – Feb. 2023

Researcher   Leader/Mentor: Xijun Li and Prof. Junchi Yan

Main objects lie in the developing superior SAT solvers and exploring insightful ideas regarding the SAT problem, ultimately making valuable contributions to both the research community and practical applications.

- The **SAT solver Kissat_Adaptive_Restart** that I was personally responsible for achieved 12th place in Anniversary Track and 26th place in Main Track worldwide.
- The solving strategy is **integrated into Huawei's practical applications**, with an average performance gain of around 15% and a maximum performance improvement of 97%.
- My first-authored paper on SAT instance generation "HardSATGEN: Understanding the Difficulty of Hard SAT Formula Generation and A Strong Structure- Hardness-Aware Baseline" was accepted in **KDD 2023**.
- The data-level contribution is integrated into **HUAWEI CLOUD's OptVerse AI Solver**. OptVerse AI Solver solves problems with hundreds of millions of variables, at 100x computing speed thanks to distributed parallel acceleration. OptVerse AI Solver ranks first on the Hans Mittelmann Benchmark for Simplex LP solvers and won the most prestigious award at the World Artificial Intelligence Conference 2023: SAIL (Super AI Leader) Award.

Honors and Awards

National Scholarship (top 0.2% in the nation)	2019
Graduate National Scholarship (top 1% in the CS department)	2023
Outstanding Graduate of Shanghai (top 3%)	2022
Huawei Fellowship (top 5%)	2020
HyperGryph Fellowship (top 3%)	2021

1st-Class Academic Excellence Scholarship (top 1%)	2019
Merit Student of Shanghai Jiao Tong University	2019, 2020
1st-Class Academic Scholarship for Graduate Students	2022
Special Prize for Social Practice of SJTU	2020
First Prize for Social Practice of SJTU	2019
Advanced Individuals in Social Practice of SJTU	2020

Miscellaneous

- Academic Service: I serve as the reviewer for top-tier ML conferences, e.g. NeurIPS, ICML, ICLR, and journals, e.g. Machine Learning.
- Blog: https://yangco-le.github.io/
- GitHub: https://github.com/yangco-le
- Languages: English - Experienced, Mandarin - Native speaker