

Changliang Zhou

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Profile

I am a Ph.D. student in Intelligent Manufacturing and Robotics at Southern University of Science and Technology, with an expected graduation in December 2026. I am currently actively seeking postdoctoral research positions or industrial R&D roles. My research focuses on the field of **AI for Optimization**, with a specific expertise in leveraging deep reinforcement learning to tackle NP-hard combinatorial optimization problems (COPs) within industrial contexts, such as vehicle routing problems (VRPs). Throughout my Ph.D. program, I have conducted systematic research on **out-of-distribution zero-shot generalization** and **domain foundation model construction** for efficient end-to-end models. Furthermore, I am the founder and lead developer of EasyCO, a standardized, highly scalable, general-purpose platform for combinatorial optimization. To date, EasyCO has integrated standardized workflows for 50+ solvers and supports automated solving for 150+ COPs.

Highlights

ICAM: Instance-Conditioned Adaptation Model for Thousand-Scale Generalization [IEEE T-ITS 2026] [Code&Paper](#) 2023–2024

- Introduced a lightweight instance-conditioned adaptation function and a low-complexity attention mechanism to adjust policies using instance-specific information.
- Validated the method on four representative routing problems (TSP, CVRP, ATSP & CVRPTW), improving generalization while preserving **low inference time (at the second level)**.

L2R: Learning to Reduce Search Space for Million-Scale Generalization [KDD 2026] [Code&Paper](#) 2024–2025

- Proposed the first learning-based framework to dynamically prune the search space by adaptively prioritizing nodes based on problem-specific features and states.
- Developed **the only currently available** specialist neural model capable of solving VRP instances with **10-million-node**. Trained only on **100-node** instances, it generalizes to TSP10M in a zero-shot manner with a 5.05% gap.

URS: A Powerful Domain Foundation Model for Cross-Problem Zero-Shot Generalization [ICML 2026] [Code&Paper](#) 2025–2026

- Proposed a unified data representation that eliminates the need for problem enumeration, significantly broadening problem coverage by projecting diverse VRP variants into a unified feature space.
- Developed **the first** domain foundation model capable of solving **100+** VRP variants with a single model without retraining or fine-tuning, while successfully scaling to **7,000-node** instances.

EasyCO: A Learning-Driven Platform for Combinatorial Optimization [In Development] (Founder) 2025–Present

- Established a standardized pipeline spanning data generation, environment setup, training, and evaluation.
- Currently supports standardized workflows for **50+** solvers and automated solving for **150+** combinatorial optimization problems.

Publications

As of July 1, 2026, I have published **11 papers**, including **4 first/co-first-author papers**. My work has appeared in venues including **ICML, KDD, and IEEE T-ITS**, and has received **263 citations** on Google Scholar. Selected publications are listed below:

- **Changliang Zhou**, Canhong Yu, Shunyu Yao, Xi Lin, Zhenkun Wang[†], Yu Zhou, Qingfu Zhang. URS: A Unified Neural Routing Solver for Cross-Problem Zero-Shot Generalization. *43rd International Conference on Machine Learning (ICML)*, 2026.
- **Changliang Zhou***, Xi Lin*, Zhenkun Wang[†], Qingfu Zhang. Learning to Reduce Search Space for Generalizable Neural Routing Solver. *32nd SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2026.
- **Changliang Zhou***, Xi Lin*, Zhenkun Wang[†], Xialiang Tong, Mingxuan Yuan, Qingfu Zhang. Instance-Conditioned Adaptation for Large-Scale Generalization of Neural Routing Solver. *IEEE Transactions on Intelligent Transportation Systems (T-ITS)*, 2026.
- Zhi Zheng, **Changliang Zhou**, Xialiang Tong, Mingxuan Yuan, Zhenkun Wang[†]. UDC: A Unified Neural Divide-and-Conquer Framework for Large-Scale Combinatorial Optimization Problems. *Advances in Neural Information Processing Systems (NeurIPS)*, 2024.
- Yubin Xiao, Di Wang, Boyang Li, Mingzhao Wang, Xuan Wu, **Changliang Zhou**, You Zhou[†]. Distilling Autoregressive Models to Obtain High-Performance Non-autoregressive Solvers for Vehicle Routing Problems with Faster Inference Speed. *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2024.
- Canhong Yu, **Changliang Zhou**, Rongsheng Chen, Zhenkun Wang[†], Yu Zhou. Rethinking Constraint Awareness for Efficient State Embedding of Neural Routing Solver. *arXiv preprint arXiv:2605.10122*, 2026.
- Rongsheng Chen, **Changliang Zhou**, Canhong Yu, Yuanyao Chen, Yu Zhou, Zhuo Chen, Zhenkun Wang[†]. SPACE: Unifying Symmetric and Asymmetric Routing Problems for Generalist Neural Solver. *arXiv preprint arXiv:2605.24484*, 2026.
- Yunpeng Ba, Xi Lin, **Changliang Zhou**, Ruihao Zheng, Zhenkun Wang[†], Xinyan Liang, Zhichao Lu, Jianyong Sun, Yuhua Qian, Qingfu Zhang. Survey on Neural Routing Solvers. *arXiv preprint arXiv:2602.21761*, 2026.

* Equal contribution [†] Corresponding author _____ Co-mentored student

Service and Honors

- **Reviewer**: ICLR 2026; NeurIPS 2026.
- **University Honor**: Outstanding Postgraduate Student, Southern University of Science and Technology, 2022–2023.