

Shaobo Wang | M.Eng. Student at SJTU

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Education

Shanghai Jiao Tong University

Computer Science, advised by Prof. Junchi Yan

Rank: 2/81, GPA: 3.98/4.0

Research Area: Trustworthy Machine Learning, Computer Vision, Theory of Foundation Model

M.Eng.

Sept 2022 – Mar 2025 (expected)

Harbin Institute of Technology

Software Engineering

Rank: 1/183, GPA: 3.96/4.0

B.Eng.

Sept 2018 – Jun 2022

Harvard University & Massachusetts Institute of Technology

Artificial Intelligence and Robotics

Visiting Program

Aug 2020

Publications & Preprints

* denotes equal contribution.

Visualizing the Emergence of Intermediate Visual Patterns in DNNs

The 35th Conference on Neural Information Processing Systems (NeurIPS 2021)

Mingjie Li, Shaobo Wang, Quanshi Zhang.

R01

Think2Drive: Brick by Brick to Build a Model-based RL Agent for Quasi-Realistic Autonomous Driving (in CARLA-v2)

The 18th European Conference on Computer Vision ECCV 2024 (ECCV, 2024)

Qifeng Li, Xiaosong Jia, Shaobo Wang, Junchi Yan

R02

Not All Samples Should Be Utilized Equally: Towards Understanding and Improving Dataset Distillation

under submission to NeurIPS, 2024

Shaobo Wang, Yantai Yang, Qilong Wang, Kaixin Li, Linfeng Zhang, Junchi Yan

R03

Unified Batch Normalization: Identifying and Alleviating the Feature Condensation in Batch Normalization and a Unified Framework

arxiv preprint, 2023

Shaobo Wang, Xiangdong Zhang, Dongrui Liu, Junchi Yan

R04

Trap of Feature Diversity in the Learning of MLPs

arxiv preprint, 2022

Dongrui Liu*, Shaobo Wang*, Jie Ren, Kangrui Wang, Sheng Yin, Huiqi Deng, Quanshi Zhang

R05

Research & Industry Experience

Research Assistant

Department of Statistics and Data Science, Yale University

LLM Theory, under supervision of Prof. Zhuoran Yang.

Mar 2024 – now

Research Assistant

ReThinklab, Shanghai Jiao Tong University

Explainable AI and Autonomous Driving, under supervision of Prof. Junchi Yan.

Aug 2023 – now

- Proposed a theoretical understanding of dataset distillation for the first time in this research line, designed a new method and obtained SOTA performance on current benchmark datasets[R03].
- Discovered the feature condensation phenomenon in the learning of normalization-based neural networks and designed a unified normalization framework that generates SOTA performance on visual tasks[R04].

Research Collaboration

Research institute, COWA ROBOT

Aug 2023 – Dec 2023

Autonomous Driving, under supervision of Prof. Junchi Yan.

- In charge of the design and optimization of student module (perception and control) in the End2End autonomous driving system in the renowned CARLA-v2 simulator[R02].

Research Intern

John Hopcroft Center for Computer Science, Shanghai Jiao Tong University

Jun 2020 – Aug 2023

Explainable AI, under supervision of Prof. Quanshi Zhang.

- Worked on visualizing the knowledge points learned by neural networks temporarily and spatially to analyze its behaviour and dynamics[R01].
- Investigated and theoretically explained a fundamental yet counter-intuitive two-phase phenomenon of feature diversity in the early learning of MLPs[R05].
- Proposed a learning-based faithful attribution method to reduce the inconsistency of the attribution values such as the classic Shapley value.

Academic Services

Conference Reviewer:

ICML 2022-2024, NeurIPS 2022-2023, CVPR 2023-2024, EMNLP 2022-2023, ACL 2023

Selected Honors and Awards

Most Influential Graduate Student ($< 0.05\%$)

Harbin Institute of Technology

Mar 2022

Outstanding Graduate Student

Shandong Province, China

Mar 2022

Outstanding Graduate Student

Harbin Institute of Technology

Mar 2022

National Scholarship

Ministry of Education, China

Oct 2019

Competitive Skills & Hobbies

- **TOEFL iBT:** 103 Listening(28), Speaking(22), Reading(26), Writing(27)
- **Deep Learning Frameworks:** Pytorch, TensorFlow(2.0), Fast.ai.
- **Programming Languages:** C, C++, Java, Python, \LaTeX , HTML/CSS/Javascript.
- **Chess:** National Level-2 Athlete, championship record holder in Anhui, China.
- **Piano:** Co-played with Lang Lang (one of the Most Talented Pianists in the world).
- **Vocal:** Multiple awards in vocal and singing competitions.