

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

Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS 2021)

Mingjie Li, Shaobo Wang, Quanshi Zhang.

R01

Towards Understanding and Improving Dataset Distillation with Gradient Dynamics Correction

under submission to NeurIPS, 2024

Shaobo Wang, Qilong Wang, Yantai Yang, Kaixin Li, Zhanpeng Zhou, Junchi Yan

R02

Unified Batch Normalization: Identifying and Alleviating the Feature Condensation in

Batch Normalization and a Unified Framework

arxiv preprint, under submission to ECCV, 2024

Shaobo Wang, Xiangdong Zhang, Junchi Yan

R03

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

R04

Extracting Consistent Attribution Values *w.r.t.* Different Partitions of Input Variables

under submission, 2023

Shaobo Wang*, Huiqi Deng*, Hanying Zhang, Quanshi Zhang.

R05

Think2Drive: Brick by Brick to Build a Model-based RL Agent for Quasi-Realistic

Autonomous Driving (in CARLA-v2)

under submission to ECCV, 2024

Qifeng Li, Xiaosong Jia, Shaobo Wang, Junchi Yan

R06

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 observation of dataset distillation tasks, and obtain SOTA performance on current benchmark datasets[R02].
- 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[R03].

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[R05].

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[R03].
- Proposed a learning-based faithful attribution method to reduce the inconsistency of the attribution values such as the classic Shapley value[R04].

Research Collaboration

Microsoft Research Asia, Social Computing Group

Jun 2022 – Dec 2022

Responsible AI Research, under supervision of Dr. Xiting Wang.

- Participated in the design of a Responsible NLP benchmark.

Research Intern

Institute for Interdisciplinary Information Sciences, Tsinghua University

Feb 2021 – Jun 2021

Multimodal Learning, under supervision of Prof. Hang Zhao.

- Participated in auto-foley projects with multimodal learning techniques.

Research Intern

Department of Earth System Science, Tsinghua University

Mar 2020 – July 2020

Remote Sensing, under supervision of Dr. Zhichao Li.

- Participated in COVID-19 outbreak prediction in Brasilia and proposed to combine multimodal information to improve the accuracy.

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.