Shaobo Wang | M.Eng. Student at SJTU

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Education

Shanghai Jiao Tong University **M.Eng.**
Computer Science, advised by Prof. Junchi Yan *Sept 2022 – Mar 2025 (expected)*
Rank: 2/81, GPA: 3.98/4.0
Research Area: Explainable Aritificial Intelligence, Deep Learning Theory, Computer Vision

Harbin Institute of Technology **B.Eng.**
Software Engineering *Sept 2018 – Jun 2022*
Rank: 1/203, GPA: 3.96/4.0

Harvard University & Massachusetts Institute of Technology **Visiting Program**
Artificial Intelligence and Robotics *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) *R01*
Mingjie Li, Shaobo Wang, Quanshi Zhang.

Unified Batch Normalization: Identifying and Alleviating the Feature Condensation in Batch Normalization and a Unified Framework
arxiv preprint, under submission, 2023 *R02*
Shaobo Wang, Xiangdong Zhang, Junchi Yan

Trap of Feature Diversity in the Learning of MLPs
arxiv preprint, under submission, 2022 *R03*
Dongrui Liu*, Shaobo Wang*, Jie Ren, Kangrui Wang, Sheng Yin, Huiqi Deng, Quanshi Zhang

Extracting Consistent Attribution Values *w.r.t.* Different Partitions of Input Variables
under submission, 2023 *R04*
Shaobo Wang*, Huiqi Deng*, Hanying Zhang, Quanshi Zhang.

Think2Drive: Brick by Brick to Build a Model-based RL Agent for Quasi-Realistic Autonomous Driving (in CARLA-v2)
under submission, 2023 *R05*
Qifeng Li, Xiaosong Jia, Shaobo Wang, Junchi Yan

Research & Industry Experience

Research Assistant
ReThinklab, Shanghai Jiao Tong University *Aug 2023 – now*
Explainable AI and Autonomous Driving, under supervision of Junchi Yan.
- 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[R02].

Research Collaboration
Research institute, COWA ROBOT *Aug 2023 – now*
Autonomous Driving, under supervision of 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 phenemenon 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 bechmark.

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 accuracity.

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.