

Fan Yue

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Short Bio: I am a Ph.D. student in Computer Vision and Machine Learning Department of Max Planck Institute for Informatics, working with Prof. Bernt Schiele and Dr. Dengxin Dai.

My research goal is to build intelligent machines that can perceive and understand the world as humans, with a special focus on **learning representations** of our visual world. So far, my primary focus has been on tackling it through a data-centric lens. That is, **how can we learn good representations from imperfect data?** Moving forward, I am excited to explore the following research questions:

- How can we learn robust representations that generalize well across environments?
- What are the useful inductive biases for enhancing representation robustness? How can we effectively incorporate them into the model?

Education

2020 - 2024 (expected), Max Planck Institute for Informatics, Germany

PhD Candidate in Computer Science

Advisor: Prof. Bernt Schiele

2017 - 2020, Saarland University, Germany

MSc. in Computer Science - Final GPA: 1.2/1.0

Thesis: Analyzing the Dependency of ConvNets on Spatial Information - GCPR 2020

Experience

June 2023 - November 2023, Google, Switzerland

Student Researcher

- **Topic:** Toward a diffusion-based vision foundation model for dense prediction tasks
- **Advisors:** Dr. Yongqin Xian, Dr. Xiaohua Zhai, Dr. Alexander Kolesnikov, Prof. Federico Tombari
- **Achievement:** Proficient in parallel training of foundation models over large compute clusters, with my largest training session utilizing 1,024 TPU chips.

Since 2020, Max Planck Institute for Informatics, Germany

PhD Student

- **Topic:** Representation learning with weak supervision
- **Advisor:** Prof. Bernt Schiele

August 2018 - May 2019, Spoken Language Systems group, Saarland University

Research Assistant

- **Topic:** Learning better natural language representations by leveraging external knowledge from vision and knowledge graphs
- **Advisors:** Dr. Aditya Mogadala, Dr. Marius Mosbach, Prof. Dietrich Klakow

Projects

USB: A Unified Semi-supervised Learning Benchmark for Classification

USB (1.2k+ stars and 158+ forks!) is a Pytorch-based Python package for Semi-Supervised Learning (SSL). It is easy-to-use/extend, affordable, and comprehensive for developing and evaluating SSL algorithms. USB provides the implementation of 14 SSL algorithms based on Consistency Regularization, and 15 tasks for evaluation from CV, NLP, and Audio domain.

Publications

- [1] **Yue Fan**, Yongqin Xian, Xiaohua Zhai, Alexander Kolesnikov, Muhammad Ferjad Naeem, Bernt Schiele, Federico Tombari. Toward a Diffusion-Based Generalist for Dense Vision Tasks. 2nd Workshop on Foundation Models at IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR Workshop**), 2024. (**oral**)
- [2] **Yue Fan**, Anna Kukleva, Dengxin Dai, Bernt Schiele. SSB: Simple but Strong Baseline for Boosting Performance of Open-Set Semi-Supervised Learning. IEEE/CVF International Conference on Computer Vision (**ICCV**), 2023.
- [3] Hao Chen, Ran Tao, **Yue Fan**, Yidong Wang, Jindong Wang, Bernt Schiele, Xing Xie, Bhiksha Raj, Marios Savvides. Softmatch: Addressing the quantity-quality trade-off in semi-supervised learning. The Eleventh International Conference on Learning Representations (**ICLR**), 2023.
- [4] Yidong Wang, Hao Chen, Qiang Heng, Wenxin Hou, **Yue Fan**, Zhen Wu, Jindong Wang, Marios Savvides, Takahiro Shinozaki, Bhiksha Raj, Bernt Schiele, Xing Xie. FreeMatch: Self-adaptive Thresholding for Semi-supervised Learning. The Eleventh International Conference on Learning Representations (**ICLR**), 2023.
- [5] Yidong Wang*, Hao Chen*, **Yue Fan***, SUN Wang, Ran Tao, Wenxin Hou, Renjie Wang, Linyi Yang, Zhi Zhou, Lan-Zhe Guo, Heli Qi, Zhen Wu, Yu-Feng Li, Satoshi Nakamura, Wei Ye, Marios Savvides, Bhiksha Raj, Takahiro Shinozaki, Bernt Schiele, Jindong Wang, Xing Xie, Yue Zhang. Usb: A unified semi-supervised learning benchmark for classification. Advances in Neural Information Processing Systems (**NeurIPS**), 2022. (* Equal contribution)
- [6] **Yue Fan**, Dengxin Dai, Anna Kukleva, Bernt Schiele. CoSSL: Co-Learning of Representation and Classifier for Imbalanced Semi-Supervised Learning. IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022.
- [7] **Yue Fan**, Anna Kukleva, Dengxin Dai, Bernt Schiele. Revisiting consistency regularization for semi-supervised learning. International Journal of Computer Vision (**IJCV**) 2023.
- [8] **Yue Fan**, Yongqin Xian, Max Maria Losch, Bernt Schiele. Analyzing the dependency of convnets on spatial information. The German Conference on Pattern Recognition (**GCPR**), 2020.
- [9] Haoran Wang*, **Yue Fan***, Zexin Wang, Licheng Jiao, Bernt Schiele. Parameter-free spatial attention network for person re-identification. arXiv 2018. (* Equal contribution)

Teaching

Winter semester 2023, Saarland University

Head teaching assistant in Elements of Data Science and Artificial Intelligence

Winter semester 2020 - 2022, Saarland University

Teaching assistant in Elements of Data Science and Artificial Intelligence

Winter semester 2019, Saarland University

Teaching assistant in Neural Networks: Implementation & Application

Skills

Programming

- Python
- Matlab
- PyTorch
- Tensorflow/Jax

Languages

- Mandarin (native)
- English (C1)
- German (B1)