

# 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 with limited supervision?** Moving forward, I am excited to explore the following research questions:

- How can we learn universal representations that transfer well to various downstream tasks?
- What are the useful inductive biases for perceiving and understanding the visual world? How can we effectively inject them into the model?

## Education

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**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

**2013 - 2017, Xidian University, China**

BSc. in Intelligent Science and Technology

## Research

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**Since 2020, Max Planck Institute for Informatics, Germany**

PhD Student in Computer Vision and Machine Learning

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

**June 2023 - November 2023, Google, Switzerland**

Student Researcher

- **Topic:** Toward a diffusion-based multi-task generalist for dense vision tasks
- **Advisors:** Dr. Yongqin Xian, Dr. Xiaohua Zhai, Dr. Alexander Kolesnikov, Prof. Federico Tombari

**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

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**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

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- [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

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## 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

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## Programming

◦ Python                      ◦ Matlab                      ◦ PyTorch                      ◦ Tensorflow/Jax

## Languages

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