Shi Tang

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- Focus on building learning systems allowing rapid establishment of models with lower data requirements.
- Familiar with metric-based few-shot learning, have worked on improving novel-class generalization of these methods.
- Currently interested in developing novel meta-learning methods better capable of handling the complexity of task space.

EDUCATION

Tsinghua University 2021.9 - present
Master's Student, Software Engineering, GPA: 3.73 Supervised by Prof. Guiming Luo

Dalian University of Technology 2017.9 - 2021.6
Bachelor's Student, Software Engineering, GPA: 3.81 Supervised by Prof. Xinchen Ye

PAPERS

Unleash the Power of Local Representations: Feature Calibration and Adaptive Metric for Few-Shot Learning
Shi Tang, Chaoqun Chu, Guiming Luo, Xinchen Ye, Zhiyi Xia, Haojie Li Under review

- Focus on the unexploited potential of local representations in improving novel-class generalization.
- Propose a novel pretraining paradigm for few-shot learning and an adaptive metric to handle various set combinations.
- Propose a Smoothed KL-Divergence for distilling few-shot learning nets with both theoretical and empirical supports.
- The proposed method achieves **new state of the art on three popular benchmarks**, and in the fine-grained scenario it even **outperforms state-of-the-art transductive and cross-modal methods**.

Cross Modality Depth Estimation via Unsupervised Stereo RGB-to-Infrared Translation
Shi Tang, Xinchen Ye, Fei Xue, Rui Xu ICASSP, 2023

- Propose to estimate depth in a cross-modal way to improve robustness to illumination and misleading textures.
- Propose a Fourier domain adaptation strategy and a multi-space warping regularization for synthesizing stereo IR images.
- Error reduction of **6.13%** and **5.10%** on D1-all against GWCNet and Monodepth, respectively.

PROJECTS

Meta-Learning for Cross-Subject Hand Gesture Recognition via Electromyography 2022.8 - present

- Focus on cross-subject recognition that is seldom considered by previous research.
- Regard recognition for different subjects as tasks within one family, and propose to learn across them.
- Propose to divide EMG signals converted to Fourier domain into groups by frequency band and meta-learn the weights of different bands for different subjects.
- Accuracy improvement of **13.04%** against baseline in cross-subject setting.

Task-Specific Few-Shot Image Classification by Balancing Sample- and Class-Level Generalization 2022.6

- Aiming at few-shot classification tasks in real-world scenarios where new tasks may contain both base and novel classes.
- Propose to fuse features of normal and episodic pretraining weighted by a proposed Cross-Attention Module to balance sample- and class-level generalization task-specifically.
- Improvements of **16.30%**, **6.91%** and **1.46%** against normal pretraining, episodic pretraining and Meta-Baseline, respectively for accuracy on reconstructed miniImageNet under 1-shot setting.

Vehicle Mounted Multi Band Stereo Vision Perception System 2018.8 - 2019.9

- Responsible for improving the sub-pixel corner detection algorithm based on the checkerboard pattern, as well as the calibration and rectification of infrared cameras.
- Propose a novel infrared calibration board design scheme.
- **Won the bid** in July 2019.

AWARDS

2017 – 2018 Scholarship for Academic Excellence
2018 – 2019 Scholarship for Academic Excellence
2019 – 2020 Scholarship for Academic Excellence
2022 – 2023 Tsinghua Academic Scholarship
2017 – 2018 Lingshui Scholarship
2021 Outstanding Graduate of DUT
2021 – 2022 Guoshuang Scholarship