MOYANG LI

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EDUCATION

Huazhong University of Science and Technology, Wuhan, China 09/2021 - 10/2022
M.E. in Artificial Intelligence, Grade: 92.38/100, GPA: 4.0/4.0

Huazhong University of Science and Technology, Wuhan, China 09/2017 - 06/2021
B.E. in Automation, Grade: 88.50/100, GPA: 3.92/4.0

EXPERIENCE

Westlake University, Hangzhou, China, Intern 06/2022 - Present
Oxford University, Oxford, England, Visiting Student 07/2018 - 08/2018

PROJECTS

NeRF-based 3D Reconstruction 06/2022 - Present

- Implement NeRF in various scenarios. Train NeRF for novel view synthesis in the RGB space from asynchronous event streams. Train NeRF for novel view synthesis with only sparse views.
- Propose a geometric regularization loss to constrain the geometry for few-shot novel view synthesis based on neural implicit representation through leveraging the multi-view consistency property.
- Randomly select virtual unseen views around the sparse views. Suppose that appearance is the same in multiple views for the same point in the world coordinate system and minimize the difference between the two views' appearance. Infer the depth of a point in an unseen view through the transformation relationship of two views and optimize the depth.
- Achieve comparable performance on the real-world multi-view datasets DTU and LLFF with only simple regularization strategies compared with the state-of-the-art model RegNeRF and InfoNeRF.

Class Imbalance Alleviation with Data Augmentation and Bias Compensation 01/2022 - 04/2022

- Utilize a balance-oriented data augmentation which fuses inter-class and intra-class samples to expand training sets. The strategy of augmentation is in favour of the minority class.
- Compensate for the bias caused by class imbalance through a modification on standard cross-entropy loss, motivated by the optimal hyperplane of Gaussian distribution.
- Utilize range loss to reduce the intra-class variations and enlarge the inter-class distance of imbalanced datasets. Increase the classification accuracy of tail classes by above 5-10% for different imbalance ratios. The boundary of tail classes can be better shaped, which leads to clearer separation.
- Achieve nearly state-of-the-art performance on imbalanced CIFAR-10 and CIFAR-100 datasets. Improve classification accuracy of tail class obviously and preserve the performance of the head class.
- Combined with FixMatch, the method could be applied to the semi-supervised learning task, which is still in progress.

Transformer-based Emotion Recognition 12/2020 - 05/2021

- Apply Transformer-based model to an EEG-based emotion recognition task. Assign attention weight to both the time domain and channels of EEG signals.
- Combine Transformer with the convolutional neural network to enhance the ability to capture global and local information simultaneously. Self-attention mechanism of the Transformer helps enlarge the receptive field and capture long-range dependencies, while CNN focuses more on the local area.
- Discover which channel of EEG signals is more relevant to the task through the visualization of attention weight.
- Obtain better performance than traditional CNN-based models. Assigning weight to the time domain performs better than assigning weight to channels.

ACADEMIC HONORS

Outstanding Graduate at Huazhong University of Science and Technology	2021
Third Prize of the 12th Central China University Students' Mathematical Modeling Invitational Competition	2019
Science and Technology Scholarship	2019
Grand Prize of C Language Programming Contest	2019
Study Excellence Scholarship	2018

SKILLS AND INTERESTS

Research Interests	3D Reconstruction, Representation Learning, Explainable Machine Learning
Programming Language	Python, C/C++, LaTeX, Matlab