Yuanbiao Wang

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EDUCATION

Tsinghua University   Beijing, China
Bachelor's in Software Engineering   *Aug. 2016 – July 2021*
- GPA: 3.82/4.0, Ranking: 7/85
- Core courses: 4.0 GPA for Calculus, Linear Algebra, Probability and Statistics, Data Structure, Introduction To Algorithms, Deep Learning, Introduction to Artificial Intelligence, Modern Operating Systems, etc.

PROJECTS AND EXPERIENCES

Learning a white-box test-time augmentation policy for biomedical models   June 2020 – Present
Advised by Prof. Hanspeter Pfister   *Harvard University*
- Proposed a white-box image enhancement method for test-time data augmentation and modeled it to be a continuous optimization problem over a policy model that outputs enhancement levels, replacing the traditional decision making process modeling.
- Designed a novel optimization method based on gradient estimation with biased surrogate gradients as prior knowledge and proposed several approaches to solve the few-shot learning challenge; Devised differentiable enhancement filters and experimented the proposed method on the manually-corrupted MNIST dataset; Reported up to 0.06 CE loss decrease and up to 2% accuracy increase with only 2% of the test data to train our policy network, comparable to the oracle baseline.
- Preparing a first-author paper that will be submitted to ICML2021.

Facial expression recognition through multi-task semi-supervised learning   April. 2020 – Present
Advised by Prof. Yue Gao   *Tsinghua University*
- Reproduce the state-of-art contrastive learning methods on facial expression recognition and report an 46.03% test accuracy on the Affectnet facial expression recognition (FER) benchmark dataset
- Proposed a multi-task learning framework to enhance the performance with auxiliary facial landmark detection task; Report a 46.79% test accuracy on Affectnet dataset, with an 0.76% increase compared to the baseline SimCLR method.
- Experimenting with human-facial-specific weakly-supervised facial deformation (3d warping by the mapping of Delauney triangles of facial landmarks) as the data augmentation to increase its relevance with our specific task; Also trying with a GAN-like network to generate an optimized warping field

Using Hypergraph neural networks for affective computing   Feb 2019- May 2019
Advised by Prof. Yue Gao   *Tsinghua University*
- Researched and improved the method of Hypergraph Neural Networks(HGNN) by adding a modality-wise attention block.
- Proposed a new hypergraph construction method and a handcrafted input feature the takes into account the individual specification to enhance the performance of the model
- Implemented the improved HGNN method using PyTorch and ran several experiments on the DEAP and ASCERTAIN dataset (two benchmarks for affective computing); reported a 2.68% and 5.09% accuracy increase respectively

SOCIAL ACTIVITIES

Student Union | *School of Software, Tsinghua University* | *Publicity Department Officer*   Aug 2017 – Sept 2018
- Responsible for suggesting publicity activities as well as drafting and finalizing publicity materials
- Tutored newly recruited members to help them develop publicity skills

AWARDS

- Comprehensive Excellence Award of Tsinghua University in 2018, 2019 and 2020(Awarded only to the top 10% undergraduate students)

TECHNICAL SKILLS

Programming Languages: Python, Java, C/C++, SQL, JavaScript, HTML/CSS
Professional Softwares: PyTorch, sklearn, numpy, Vue, Flask, Git, LaTeX
Language: English(fluent), Chinese(native)