Yuanbiao Wang

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Education

Tsinghua University Beijing, China
B.E. in Software Engineering *Aug. 2016 – July 2021*

- Overall GPA: 3.83/4.0, Ranking: 7/81; Major GPA: 3.91/4.0
- Core courses: 4.0 GPA in Calculus, Linear Algebra, Probability and Statistics, Data Structure, Introduction to Algorithms, Deep Learning, Introduction to Artificial Intelligence, Modern Operating Systems.
- Received **Comprehensive Excellence Award(top** 10%**)** of Tsinghua University in 2018, 2019 and 2020.

Research Experiences

Learning a white-box test-time augmentation policy for biomedical models June 2020 – Present
Advised by Prof. Hanspeter Pfister *Harvard University*

- Modeled white-box test-time data augmentation as a continuous optimization problem over enhancement levels, rather than a sequential decision-making problem.
- Designed a novel optimization method based on gradient estimation; used a surrogate student model to generate biased gradients, subsequently yielding an estimation of the covariance matrix, hence accelerating optimization.
- Designed a toy example on manually-corrupted MNIST dataset; Raised the test accuracy from 66.92% to 67.50% with only 1% of test labels to train our policy network. Also Evaluated our method on the transfer learning task from ChestXRay14 dataset to CheXpert dataset and increased the overall test ROC AUC from 0.8048 to 0.8055 with 1% of test labels.
- Preparing a first-author submission to ICML2021.[1].

Facial expression recognition through multi-task semi-supervised learning April. 2020 – Present
Advised by Prof. Yue Gao *Tsinghua University*

- Proposed a multi-task learning framework to enhance the performance with auxiliary facial landmark detection tasks; Evaluated our method on the AffectNet benchmark dataset and achieved 46.79% test accuracy, with a 0.76% increase compared to the baseline SimCLR method.
- Experimenting with a new data augmentation method, 3D deformation by Delaunay triangle mapping, to help the model learn semantic information specific to facial units.

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 that takes into account the individual specification to enhance the performance of the model.
- Implemented the improved HGNN method in PyTorch and ran thorough experiments on the DEAP and ASCERTAIN dataset (two benchmarks for affective computing); reported a 2.68% and 5.09% increases in accuracy, respectively. See the preprint at https://agil27.github.io/hgnn.pdf .

Social Activities

Student Union | *School of Software, Tsinghua University* | *Publicity Department Officer* Aug 2017 – Sept 2018

- Responsible for providing publicity activities and drafting and finalizing publicity materials.
- Tutored newly recruited members to help them develop publicity skills.

Technical Skills

Programming Languages: Python, Java, C/C++, SQL, JavaScript, HTML/CSS
Professional Software: PyTorch, sci-kitlearn, NumPy, Vue, Flask, Git, LaTeX
Language: English(fluent), Chinese(native)

[1]The preprint will be uploaded to my personal page https://agil27.github.io