ZHENYU JIANG

(+86)156-5237-2479 ⋄ jiangzhe16@mails.tsinghua.edu.cn ⋄ steve-tod.github.io

EDUCATION

Tsinghua University   *August 2016 - Present*
Senior Undergraduate   Overall GPA: 3.88, Rank: 10/283
Department of Electronic Engineering   Junior year GPA: 3.99

PUBLICATIONS

*Z. Qin, *Z. Jiang, J. Chen, C. Hu and Y. Ma, sEMG based Tremor Severity Evaluation for Parkinson's Disease using a Light-weight CNN, *IEEE Signal Processing Letters*, *equal contribution [link]

C. Ma, Z. Jiang, Y. Rao, J. Lu, J. Zhou, Deep Face Super-Resolution with Iterative Collaboration between Attentive Recovery and Landmark Estimation, *2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition*, under review

EXPERIENCE

Guibas Group, Department of CS, Stanford University   2019.7 - Present
Key Participator   *Advisor: Prof. Leonidas Guibas*

■ Project: Learning Deformation Space from a Collection of Shapes

- Collections of real parametric shapes live on a sub-manifold in deformation parametric space. By learning this sub-manifold, we can do shape editing intelligently.

- We design a novel network architecture that learns a dictionary which represents the principle deformation directions of the template shapes. The column space of learned dictionary represent the real sub-manifold.

i-Vision Group, Department of Automation, Tsinghua University   2018.11 - 2019.10
Key Participator   *Advisor: Prof. Jiwen Lu*

■ Project: Image Super-resolution Using Multi-scale Discriminator

- Current GAN-based photo-realistic SR methods tend to generate small artifacts which may not be punished by discriminator. Besides, there is not a publicly recognized metric that evaluate the perceptual quality of SR images.

- Based on ESRGAN, we propose train the neural network with multi-scale discriminators that can focus on small details. We also introduce a new learning-based metric to evaluate the visual quality of SR images.

- Our method outperforms SOTA in term of visual quality. Our proposed metric also accord with human perception.

■ Project: Face Super-resolution with Iterative Collaboration

- A lot of current Face SR methods utilize face priors, especially face landmarks. However, previously people usually detect landmarks on low-quality images and concatenate landmarks. This lead to inaccurate landmarks and limited exploitation of the information.

- We propose a deep iterative collaboration method where use RNN structure to iteratively improve landmark detection and face super-resolution. We also use face component heatmaps as attention to guide SR.

- PSNR results of our method surpass SOTA by a large margin. According to user study. our visual results are also way better.

Computer Vision lab, Department of EE, Tsinghua University   2017.11 - 2018.10
Key Participator   *Advisor: Prof. Jiansheng Chen*

■ Project: sEMG based Tremor Severity Evaluation for Parkinson's Disease

  • We propose a deep learning based approach for quantifying the tremor severity of Parkinsons Disease(PD) based on surface electromyography(sEMG).

  • We design S-Net, a light-weight convolutional neural network that learns the similarity between sEMG signals in terms of the tremor severity.

  • Combined with voting algorithm, S-Net can achieve 90.55% accuracy on task of classification of the severity of PD.

■ Project: Learning Fine-Grained Estimate of Biological State from Coarse Labels by Distribution Restoration

  • Real world biological states are continuous but we usually discretize them and evaluate based on discrete criterion.

  • We propose to learn a precise, fine-grained estimation of biological states using these coarse-grained ground truths by enforcing a distribution based loss.

  • We design smart experiment to prove the validity of our methods even without fine-grained ground truths.

COURSE PROJECTS

2019.3-2019.6	Object classification and weakly-supervised object detection, course project of Media and Cognition. [Github]
2018.9-2019.1	Super level set estimation, course project of Probability and Stochastic Processes. [Github]
2018.9-2019.1	Music source separation and location in video based on deep learning, course project of Introduction to Auditory-visual Information System. [Github]
2018.7-2018.8	Image processing based on MATLAB, course project of Advanced MATLAB Programming and Its Application.
2018.8-2018.9	Music synthesis based on MATLAB, course project of Advanced MATLAB Programming and Its Application.

HONORS&AWARDS

2019.10	National Scholarship, top 2%.
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2018.7	First Prize in Microsoft Imagine Cup 2018 Chinese Finals, entered World Finals. Top 2 among 1022 teams.
2018.5	Second Prize in the 32nd Tsinghua Challenge Cup, one of the most influential science and technology events in Tsinghua.

PROFESSIONAL SKILLS

Computer Languages	Python, C/C++, MATLAB, Python
Software & Tools	Pytorch, LaTeX, Tensorflow
English Proficiency	TOEFL 111(Reading 30 + Listening 30 + Speaking 23 + Writing 28)
	GRE 331(Verbal 162 + Quantitative 169)+3.5