Taihong Xiao

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Research Interests Computer Vision, Deep Learning, Machine Learning, Numerical Optimization

Education

2015-2018 **Department of Information Sciences, School of Mathematical Sciences, Peking University**
M.Sc. Computer Vision, Deep Learning, Machine Learning GPA: 90/100, Rank: 1/34

2013 **Department of Mathematics, University of California, Berkeley**
Summer Session C. GPA: 3.6/4.0

2011-2015 **Taishan College, Shandong University**
B.S. Mathematics and Applied Mathematics. GPA: 88.02/100, Rank: 4/14

Publications

2018 **DNA-GAN: Learning Disentangled Representations from Multi-Attribute Images**
Taihong Xiao, Jiapeng Hong and Jinwen Ma
International Conference on Learning Representations **(ICLR)**, Under Review
[OpenReview]

2017 **Low-Rank Tensor Decomposition Using ℓ_p-norm Optimization on the Matrix Manifold**
Taihong Xiao and Jinwen Ma
Journal of Computational and Applied Mathematics, Under review

2017 **GeneGAN: Learning Object Transfiguration and Attribute Subspace from Unpaired Data**
Shuchang Zhou, Taihong Xiao, Yi Yang, Dieqiao Feng, Qinyao He and Weiran He
British Machine Vision Conference **(BMVC)**, **Oral**
[ArXiv] [GitHub]

2017 **IQNN: Training Quantized Neural Networks with Iterative Optimizations**
Shuchang Zhou, He Wen, Taihong Xiao and Xinyu Zhou
International Conference on Artificial Neural Networks **(ICANN)**
[Paper]

2017 **An Integrated Learning Framework for Pedestrian Tracking**
Taihong Xiao and Jinwen Ma
International Conference on Intelligent Computing **(ICIC)**, **Oral**
[Paper] [GitHub]

Research and Working Experiences

2017.01-present **Research Intern. Megvii (Face++) Inc.** Advisor: Dr. Shuchang Zhou
► **Face Attributes Transfiguration** To overcame the problem of background change and attribute drift lying in many other models such as the CycleGAN, we proposed an instance-level object transfiguration model named GeneGAN. I participated most of experiments using

our proprietary MegDL framework, and reproduce them using TensorFlow. This paper was accepted by BMVC 2017 as an oral presentation.

► **Quantized Neural Networks** I participated the research of compressing and accelerating neural networks. We proposed an multi-bit quantization algorithm that iteratively solves for optimal scaling factor to reduce quantization errors. Besides, I did experiments of iterative training using TensorFlow. This paper was published on ICANN 2017.

2016.01-present **Research Assistant. School of Mathematical Sciences and Key Laboratory of Mathematics and Its Applications, Peking University.** Advisor: Prof. Jinwen Ma

► **Disentangled Representations** I proposed an supervised algorithm called DNA-GAN that can learn disentangled representations from multi-attribute images. The annihilating operation can prevent from trivial solutions and the iterative training strategy overcomes the difficulty of training on unbalanced datasets. This paper was under review at ICLR 2018.

► **Tensor Decomposition** I proposed a low-rank tensor decomposition method via ℓ_p-norm optimization on matrix manifolds. Theoretically, I proved that the optimal solution to our ℓ_p-norm optimization form is equivalent to the matrix SVD in the two-way case, and in the higher-order case, the obtained tensor decomposition is just the diagonal tensor SVD if the tensor is diagonally decomposable. This paper was submitted to JCAM and currently under review.

► **Pedestrian Tracking** I proposed an integrated framework for pedestrian tracking. The core of our method is an efficient switching mechanism between detection frames and non-detection frames, which is able to overcome vast variations, distractions from similar person and occlusions. This paper was accepted by ICIC 2017 as an oral presentation.

2016.09-2017.01 **Teaching Assistant. Advanced Math B. Peking University**
Gave weekly exercise classes and graded homework for students from School of Electronics Engineering and Computer Science, Peking University.

2014.09-2015.01 **Teaching Assistant. Mathematical Analysis I. Shandong University**
Gave part of lectures and graded homework for students from Taishan College, Shandong University.

Honors and Awards

2015-2017 National Scholarship, Peking University (about 1%, **for 3 consecutive years**)
2016 Excellent Academic Performance Award, Peking University
2015 Outstanding Thesis Award in Shandong Province, Shandong University
2013 National Encouragement Scholarship, Shandong University (about 10%)
2013 Second-Class Scholarship for Outstanding Students, Shandong University
2013 Second Prize in China Undergraduate Mathematical Contest in Modeling, Shandong
2010 Third-class Award of China National Mathematics Olympiad, Jiangxi
2008 Second-class Award of the National Applied Physics Competition

Skills and Interests

Programming Adept at Linux, Python, LaTeX, TensorFlow, Matlab, Caffe, Opencv, C
Math Solid background in mathematical induction, machine learning, numerical optimization
Tests CET-6: 574, TOEFL: 101, GRE: 321 (aw: 4.0), GRE Math Subject: 910 (97%)
Interests Calligraphy, Piano, Basketball, Ping-Pong, Billiards