WEIFENG LIU

College of Information and Control Engineering, China University of Petroleum (East China)

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EDUCATION

Doctor of Engineering, Control Science and Engineering

Thesis *Study on Facial Expression Recognition*

Supervisor Professor Zengfu Wang

University of Science and Technology of China, China, June 2007

Bachelor of Engineering, Automatic Control

Supervisor Professor Zengfu Wang

University of Science and Technology of China, China, July 2002

Bachelor of Science, Business Administration

Supervisor Professor Hui Yao

University of Science and Technology of China, China, July 2002

PROFESSIONAL SUMMARY

- Rich research experience in machine learning, pattern recognition and computer vision.
- Strong record of academic publications, with over 50 papers published in top journals and conferences in the fields of pattern recognition and computer vision.
- Solid background knowledge, in applied mathematics, signal processing, image processing, for application-driven theoretical research.

RESEARCH INTERESTS

- Machine Learning: multiview learning, manifold learning and sparse learning.
- Computer Vision: content based image annotation and retrieval, human behavior analysis.
- Others: application of machine learning methods to various areas, e.g. speech signal processing, large scale parallel computing, mobile computing.

RESEARCH EXPERIENCE

Associate Professor Dec. 2009-Present

College of Information and Control Engineering, University of Petroleum (East China), China

- Proposed a generalized version of Laplacian regularized sparse coding for human activity recognition called p-Laplacian regularized sparse coding, which exploits p-Laplacian regularization to preserve the local geometry.
- Proposed a new auto-encoder algorithm called Hessian regularized sparse auto-encoders (HSAE) and stacked the single-layer auto-encoders and form a deep architecture of HSAE.
- Proposed a general framework for co-training according to the diverse learners constructed in co-training and provided three types of co- training implementations, including co-training on multiple views, co-training on multiple classifiers, and co-training on multiple manifolds.
- Exploited Hessian regularization from variant viewpoints.

Visiting Scholar Sep. 2011-Aug. 2012

Centre for Quantum Computation & Intelligence Systems, University of Technology, Sydney, NSW, Australia.

- Proposed multiview Hessian regularization (mHR) framework to optimally combine multiple Hessian regularizations, each of which is obtained from a particular view of instances, and steer the classification function which varies linearly along the data manifold.
- Proposed multiview Hessian discriminative sparse coding (mHDSC) which seamlessly integrates Hessian regularization with discriminative sparse coding for multiview learning problems.
- Developed parallel implementation on GPU of some machine learning algorithm e.g. sparse PCA, LASSO.

Lecture Jul. 2007-Dec. 2009

College of Information and Control Engineering, University of Petroleum (East China), China

- Implemented popular visual features, such as local binary patterns and Gabor filter bank, for representing face image for facial expression recognition.
- Developed a content based real-time compression of video streams with high fidelity using motion detection and zero-wavelet trees.
- Developed an object detection method using histogram feature and particle swarm optimization to robustly handle the target rotation and scales.

TEACHING EXPERIENCE

Associate Professor Dec. 2009-Present

College of Information and Control Engineering, University of Petroleum (East China), China

- Pattern Recognition, Image Processing, Optical Fiber Communication, Database System, Mobile Communication.

Lecture Jul. 2007-Dec. 2009

College of Information and Control Engineering, University of Petroleum (East China), China

- Signal and System, Optical Fiber Communication, Database System, Mobile Communication.

SELECTED PUBLICATIONS

1. T.-S.Chua,X.He, **W. Liu***, M.Piccardi, Y.Wen,D. Tao,"Big Data Meets Multimedia Analytics", Signal Processing, 124: 1-4, 2016. (Special issue editorial)
2. **W. Liu**, Z. Zha, Y. Wang, K. Lu, and D. Tao, "p-Laplacian Regularized Sparse Coding for Human Activity Recognition," IEEE Trans. on Industrial Electronics, DOI: 10.1109/TIE.2016.2552147.
3. **W. Liu**, D. Tao, J. Cheng, and Y. Tang, "Multiview Hessian Discriminative Sparse Coding for Image Annotation," Computer Vision and Image Understanding, 118: 50-60, 2014.
4. **W. Liu** and D. Tao, "Multiview Hessian Regularization for Image Annotation," IEEE Trans. on Image Processing, 22: 2676-2687, 2013.
5. D. Tao, L. Jin, **W. Liu**, and X. Li, "Hessian Regularized Support Vector Machines for Mobile Image Annotation on the Cloud". IEEE Trans. on Multimedia, 15(4): 833-844, 2013.
6. **W.Liu**, H.Liu, D.Tao, Y.Wang, K.Lu, "Multiview Hessian regularized logistic regression for action recognition",Signal Processing, 110: 101-107, 2015.
7. **W.Liu**, Y.Li, X.Lin, D.Tao, Y.Wang, "Hessian regularized co-training for social activity recognition", PLOS ONE, 9: e108474, 2014.
8. **W. Liu**, H. Liu, and D. Tao, "Hessian regularization by patch alignment framework," Neurocomputing, DOI: 10.1016/j.neucom.2015.07.152.
9. D. Tao, X. Yang, **W. Liu***, S. Sun, Y. Guo, Y. Yu, J. Pang, "Cauchy Estimator Discriminant Learning for RGB-D Sensor-based Scene Classification", Multimedia Tools and Applications, DOI: 10.1007/s11042-016-3370-x.
10. **W. Liu,** T. Ma, D. Tao, J. You, "HSAE: A Hessian Regularized Sparse Auto-Encoders", Neurocomputing, 187: 59-65, 2016.
11. **W.Liu**, H.Zhang, D.Tao, Y.Wang, K.Lu, "Large-Scale Paralleled Sparse Principal Component Analysis", Multimedia Tools and Applications, 75(3): 1481-1493, 2016.
12. **W.Liu**, H.Liu, D.Tao, Y.Wang, K.Lu, "Manifold regularized kernel logistic regression for web image annotation",Neurocomputing, 172: 3-8, 2016.
13. **W. Liu**, Y. Li, D. Tao, and Y. Wang, "A general framework for co-training and its applications," Neurocomputing, 167: 112-121, 2015
14. H. Liu, **W. Liu*** and Y. Wang, "Multi-view Face Analysis Based on Gabor Features," Journal of Information and Computational Science, 11(13): 4637–4644, 2014.

PROFESSIONAL SERVICE

Membership

- IEEE member
- IEEE SMC Society member
- ACM member
- ACM SIGMM member
- ACM SIGMM China Chapter member
- CCF member
- APNNS member

Associate editor

- Neural Processing Letters

Guest editor

- Signal Processing (SI: Big Data Meets Multimedia Analytics)

Committee Service

- Co-chair of IEEE SMC TC on Cognitive Computing 2015-present

Journal reviewer

- ACM Transactions on Knowledge Discovery from Data
- Cognitive Computation
- Engineering Science and Technology an International Journal
- IEEE Intelligent Systems
- IEEE Transactions on Big Data
- IEEE Transactions on Cybernetics
- IEEE Transactions on Image Processing
- IEEE Transactions on Multimedia
- Information Sciences
- International Journal of Multimedia Information Retrieval
- Journal of Visual Communication and Image Representation
- Multimedia Systems
- Multimedia Tools and Applications
- Neurocomputing
- Neural Processing Letters
- Pattern Analysis and Application
- Pattern Recognition
- Signal Processing
- The Scientific World Journal

Conference Publicity Co-Chair

- International Conference on Machine Learning and Applications 2012

Conference Session/Workshop Chair

- International Conference on Computational Healthcare 2012
- IEEE International Conference on Systems, Man, and Cybernetics [2013, 2014, 2015, 2016]
- IEEE International Conference on Data Mining 2016

Conference PC Member/Reviewer

- BICS2016
- BIDMA2016
- CCC [2010, 2013]
- CIAC2013
- FAB [2015, 2016]
- ICCT2015
- ICIE2011
- ICIMCS2014
- ICIST2014
- ICME [2014, 2015, 2016]
- ICMLA2012,
- ICONIP2016
- ICSPAC2014
- ICTAI [2013, 2014, 2015]
- MMM2015
- MOD [2015, 2016]
- PCM [2015, 2016]
- VECTaR2014