Jiahuan Zhou

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Education

Postdoctoral Fellow, Dept.of EECS *Now*
Northwestern University, Evanston, IL

Ph.D in Computer Science, Dept.of EECS *Dec, 2018*
Northwestern University, Evanston, IL
Dissertation: Learning Visual Matching From Small-Size Samples

B.S in Electrical Engineering, Dept.of Automation *June, 2013*
Tsinghua University, Beijing, China

Research Interests

- Computer Vision
- Image/Video Processing, Analysis, and Understanding
- Metric Learning and Pattern Recognition
- Visual Instance Matching/Identification
- Visual Object Detection and Classification

Technical Skills

- **Mastering**: C, C++, Python and Matlab languages
- **Proficient**: Caffe, Tensorflow, Pytorch

Experience

Microsoft Research *Redmond, WS*
Research Intern. Mentor: Dr. Gang Hua *June, 2018 – Aug, 2018*

- Focused on objection detection via guided conscious inference.

Computational Vision Lab, Northwestern University *Evanston, IL*
Research Assistant. Advisor: Professor Ying Wu *Mar, 2017 – Dec, 2018*
June, 2014 – Feb, 2017
Sep, 2013 – Feb, 2014

- Led several research projects

Teaching Assistant. *Mar, 2017 – June, 2017*
Feb, 2014 – June, 2014

- Assisted the in-class teaching of two courses including EECS 211 (Object Oriented Programming in C++) and EECS 212 (Mathematical Foundations of Computer Science).
- Prepared the presentation slides for class and guided the office hour session.

Laboratory of PRIP in Dept.of Automation, Tsinghua University *Beijing, China*
Graduate Research Assistant. Advisor: Professor Jianjiang Feng *Sep, 2012 – June, 2013*

- Designed and performed experiments for an automatic vehicle detection system under both the static and dynamic cameras.
- Researched the spectral clustering problem and proposed a novel spectral clustering method.

Kingdee International Software Group Company Limited *Beijing, China*
Intern Software Engineer. Advisor: Dr.Dong Liu *June, 2012 – Sep, 2012*

- Researched the methods of optimizing the efficiency of the PaaS(Platform-as-a-Service).
- Developed an application based on the CloudFoundry.

Laboratory of CIMS in Dept.of Automation, Tsinghua University *Beijing, China*
Student Research Assistant. Advisor: Professor Heming Zhang *Sep, 2011 – June, 2012*

- Researched and explored the track irregularity problem.
- Designed and performed simulated experiments to test the influence of different parameters to track irregularity.

Research Experience

Navy SBIR/STTR *Evanston, IL*
Leading the project *June, 2017 – June, 2020*

- Project Subject: *Integrated Learning-based and Regularization-based Super-Resolution for Extreme MWIR Image Enhancement*
- Researched the unique properties of mid-wave infrared (MWIR) images and the issues of existing natural image-based super-resolution methods.
- Designed a novel super-resolution method for MWIR images by integrating a deep-learning edge enhanced model with our explicit soft edge regularization prior to generate sharp edged in the super-solved high-resolution result.

Army Research Office (ARO) *Evanston, IL*
Leading the project *Sep, 2015 – June, 2016*

- Project Subject: *Handling Adverse Visual Conditions for Target Tracking and Recognition*
- Explored the issues of existing visual target tracking models under the extreme adverse conditions, e.g., rainy, hazy, snowy.
- Researched the unique properties of different adverse weather conditions.
- Designed a learning-based tracker for robust visual target tracking under adverse conditions.

Samsung GRO Project *Evanston, IL*
Leading the project *Sep, 2013 – Dec, 2014*

- *Project Subject: Single Frame Super Resolution for Ultra High Definition Display*
- Researched the model-based and learning-based single-image super resolution methods.
- Designed a novel single-image super-resolution algorithm by integrating both the explicit regularization-based prior and implicit learning-based prior together to handle different regions in the image.

Activities

Reviewer for the following conferences:

- European Conf. on Computer Vision (ECCV), 2014
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2014
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2015
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2016
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2017
- IEEE Int'l Conf. on Computer Vision (ICCV), 2017
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2018
- European Conf. on Computer Vision (ECCV), 2018
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2019
- IEEE Int'l Conf. on Computer Vision (ICCV), 2019
- British Machine Vision Conference (BMVC), 2019

Reviewer for the following journals:

- IEEE Trans on Pattern Analysis and Machine Intelligence (IEEE T-PAMI) *2015-present*
- IEEE Trans on Circuits and Systems for Video Technology (IEEE T-CSVT) *2016-present*
- IEEE Trans on Image Processing (IEEE-TIP) *2017-present*
- IEEE Transactions on Information Forensics & Security (IEEE T-IFS) *2019-present*
- Computer Vision and Image Understanding (CVIU) *2018-present*

Awards and Honors

The National Encouragement Scholarship, Tsinghua University *2009 - 2010*
Academic Excellence Award, Tsinghua University *2010 - 2011*
Outstanding Graduate Scholarship, Tsinghua University *2012 - 2013*
The Murphy Fellowship, Northwestern University *2013 - 2014*
Terminal Year Fellowship, Northwestern University *2018*

Selected Publications

1. Bing Su, **Jiahuan Zhou** and Ying Wu. Order-preserving Wasserstein Discriminant Analysis. in Proceedings of IEEE International Conference on Computer Vision (ICCV'19), Seoul, Korea, Oct. 2019.

2. Xu Zou, Sheng Zhong, Luxin Yan, **Jiahuan Zhou** and Ying Wu. Learning Robust Facial Landmark Detection via Hierarchical Structured Ensemble. in Proceedings of IEEE International Conference on Computer Vision (ICCV'19), Seoul, Korea, Oct. 2019.

3. **Jiahuan Zhou** and Ying Wu. Learning Visual Instance Retrieval from Failure: Efficient Online Local Metric Adaptation from Negative Samples. in IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2019.

4. Xinzhao Li, Yuehu Liu, Zeqi Chen, **Jiahuan Zhou** and Ying Wu. Fused Discriminative Metric Learning for Low Resolution Pedestrian Detection. in Proceedings of IEEE International Conference on Image Processing (ICIP'18), Athens, Greece, Oct. 2018.

5. **Jiahuan Zhou**, Bing Su and Ying Wu. Easy Identification from Better Constraints: Multi-Shot Person Re-Identification from Reference Constraints. in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR'18), Salt Lake City, USA, June. 2018.

6. Xinzhao Li, Yuehu Liu, Zeqi Chen, **Jiahuan Zhou** and Ying Wu. Fused Discriminative Metric Learning for Low Resolution Pedestrian Detection. in IEEE International Conference on Image Processing (ICIP'18), Athens, Greece, Oct. 2018.

7. **Jiahuan Zhou**, Bing Su and Ying Wu. Easy Identification from Better Constraints: Multi-Shot Person Re-Identification from Reference Constraints. in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR'18), Salt Lake City, USA, June. 2018.

8. **Jiahuan Zhou**, Pei Yu, Tang Wei and Ying Wu. Efficient Online Local Metric Adaptation via Negative Samples for Person Re-Identification. in Proceedings of IEEE International Conference on Computer Vision (ICCV'17), Venice, Italy, Oct. 2017.

9. Wei Tang, Pei Yu, **Jiahuan Zhou**, and Ying Wu. Towards a Unified Compositional Model for Visual Pattern Modeling. in Proceedings of International Conference on Computer Vision (ICCV'17), Venice, Italy, Oct. 2017.

10. Bing Su, **Jiahuan Zhou**, Xiaoqing Ding and Ying Wu, "Unsupervised Hierarchical Dynamic Parsing and Encoding for Action Recognition" IEEE Transactions on Image Processing, 26.12 (2017): 5784-5799.

11. Bing Su, **Jiahuan Zhou**, Hao Wang and Ying Wu, "Hierarchical Dynamic Parsing and Encoding for Action Recognition", in Proc. European Conf. on Computer Vision (ECCV'16), Amsterdam, Netherlands, Oct. 2016.

12. Pei Yu, **Jiahuan Zhou** and Ying Wu, "Learning Reconstruction-based Gaze Estimation", in Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR'16), Las Vegas, USA, June. 2016.

13. **Jiahuan Zhou** and Ying Wu, "Finding the Right Exemplars for Reconstructing Single Image Super-Resolution", in Proc. IEEE Int'l Conf. on Image Processing (ICIP'16), Phoenix, USA, Sep. 2016. **(Oral)**

14. Han Hu, **Jiahuan Zhou**, Jianjiang Feng and Jie Zhou. Multi-way Constrained Spectral Clustering via Nonnegative Restriction. in Proceeding of Interntional Conference on Pattern Recognition (ICPR'12), Tsukuba, Japan, Nov. 2012. **(Oral)**