# Jiahuan Zhou

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Google Citation: (https://scholar.google.com/citations?user=ZLZmI8sAAAAJ&hl=en)

## Current

**Northwestern University** *Evanston, IL*
*Postdoctoral Fellow. Advisor: Professor Ying Wu.* *Feb, 2019 – Now*

## Education

**Northwestern University** *Evanston, IL*
Ph.D. in Computer Science Dec, 2018
Advisor: Professor Ying Wu
Dissertation: *Learning Visual Matching From Small-Size Samples*

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

## Interests

- Computer Vision
- Deep Learning
- Metric Learning and Pattern Recognition
- Image/Video Processing, Analysis, and Understanding
- Visual Identification

## Experience

**Computational Vision Lab, Northwestern University** *Evanston, IL*
*Postdoctoral Fellow. Advisor: Professor Ying Wu.* *Feb, 2019 – Nov, 2020*
*Research Assistant.* *Sep, 2013 – Dec, 2018*
*Teaching Assistant.* *Mar, 2017 – June, 2017*
*Feb, 2014 – June, 2014*

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

- Led an objection detection research project.
- Proposed a novel guided conscious-inference model for CNN-based object detection.

**Laboratory of PRIP, Tsinghua University** *Beijing, China*
*Student Research Assistant. Advisor: Professor Jianjiang Feng and Professor Jie Zhou Sep, 2012 – June, 2013*

- Designed 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 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 Project** *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 results.

**Army Research Office (ARO) Project** *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.

## Services and Activities

**Member of the Program Committee (PC):**

- The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI), 2020, 2021

**Area Chairs**:

- IEEE International Conference on Multimedia & Expo (ICME), 2020, 2021

**Reviewer for the following conferences:**

- European Conf. on Computer Vision (ECCV), 2014,2018,2020
- IEEE Intl Conf. on Computer Vision (ICCV), 2017,2019,2021
- IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2014-2021
- British Machine Vision Conference (BMVC), 2019

**Reviewer for the following journals:**

- IEEE Trans on Pattern Analysisand 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*
- Computer Vision and Image Understanding (CVIU) *2018-present*
- IEEE Transactions on Information Forensics & Security (IEEE T-IFS) *2019-present*
- International Journal of Computer Vision (IJCV) *2019-present*
- Signal, Image and Video Processing (SIVP) *2019-present*
- Neurocomputing (NEUCOM) *2020-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*

## Publications (*Corresponding Author)

*Published Papers*

1. Bing Su, **Jiahuan Zhou***,and Ying Wu. Linear and Deep Order-Preserving Wasserstein Discriminant Analysis, in IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2020 (*Corresponding Author)

2. **Jiahuan Zhou**, Bing Su, Ying Wu. Online Joint Multi-Metric Adaptation from Frequent Sharing-Subset Mining for Person Re-Identification. in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR'20), Seattle, USA, June. 2020.

3. Yansong Tang, **Jiahuan Zhou**, Ying Wu, Jiwen Lu, Jie Zhou Uncertainty-aware Score Distribution Learning for Action Quality Assessment. in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR'20), Seattle, USA, June. 2020.

4. 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.

5. 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. (*Corresponding Author)

6. **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.

7. 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.

8. **Jiahuan Zhou**, Nikolaos Karianakis, Ying Wu and Gang Hua. Conscious Inference for Object Detection. 2018.

9. **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.

10. **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.

11. 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.

12. 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.

13. 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.

14. 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.

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

16. 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)**

*Submitted Manuscripts*

1. **Jiahuan Zhou**, Pengbo Zhao and Ying Wu. Perceptual Image Quality Assessment from Distortion-Guided Hierarchical Attention, **In Submission, (2020)**

2. **Jiahuan Zhou**, Gengxing Wang and Ying Wu. PEP-SR: Perceptually Edge-Preserving Single Image Super-Resolution, **In Submission, (2020)**

3. **Jiahuan Zhou**, Gengxing Wang and Ying Wu. Unsupervised Deep Embedding Learning from Discriminative Feature Uncertainty Modeling, **In Submission, (2020)**

4. Zeqi Chen, Zhichao Cui, **Jiahuan Zhou**, Yuehu Liu. Mutual Co-teaching with Efficient Triplets Mining for Unsupervised Person Re-Identification, **In Submission, (2020)**

5. Zhijun Zhang, Xu Zou, **Jiahuan Zhou**, Luxin Yan, Sheng Zhong and Ying Wu. A Grammatical Compositional Model for Video Interactive Action Detection, **In Submission, (2020)**

6. Mingfu Liang, **Jiahuan Zhou***, Xiangyun Zhao and Ying Wu. Mitigate Forgetting for Incremental Learning in Semantic Segmentation, **In Submission, (2020)** (*Corresponding Author)

7. Gengxing Wang, **Jiahuan Zhou*** and Ying Wu. Exposing Deep-faked Videos by Anomalous Co-motion Pattern Detection. arXiv preprint arXiv:2008.04848 (2020). (*Corresponding Author)

## Teaching Experience

**Guest Lecturer, Northwestern University** *Fall, 2020*
*Course:* ELEC-ENG 332, Introduction to Computer Vision
*Responsibilities*: Invited to teach one lecture on my Person Re-Identification research work to graduate students.

**Guest Lecturer, Northwestern University** *Winter, 2019*
*Course:* ELEC-ENG 432, Advanced Computer Vision
*Responsibilities*: Invited to teach one lecture on my Negative Sample Learning research work to graduate students.

**Guest Lecturer, Northwestern University** *Winter, 2019*
*Course:* ELEC-ENG 433, Statistical Pattern Recognition
*Responsibilities*: Invited to teach one lecture of pattern recognition methods to graduate students. Developed and delivered 80-minute lecture with interactive components.

## Mentoring Experience

**Mentor for Tianqi Wang, Northwestern University Master Student** *Dec,2018 - June,2019*
*Current Status:* Ph.D. Student in University of Florida

**Mentor for Jian Xu, Northwestern University Master Student** *Dec,2018 - June,2020*
*Current Status:* ByteDance Ltd.

**Mentor for Yuxiang Guo, Northwestern University Master Student** *Sep,2020 - Now*
*Current Status:* Graduate student in the Wu lab