

ZHANGJIE CAO

Stanford University AI Lab, Room 240

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Education

Stanford University

PH.D. OF COMPUTER SCIENCE

U.S.A

September 2018 - Now

Tsinghua University

BACHELOR OF SOFTWARE ENGINEERING

China

September 2014 - July 2018

• GPA: 91/100

Publications

Zhangjie Cao*, Kaichao You*, Mingsheng Long, Jianmin Wang, Qiang Yang. **Learning to Transfer Examples for Partial Domain Adaptation**. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.

Hong Liu*, **Zhangjie Cao***, Mingsheng Long, Jianmin Wang, Qiang Yang. **Separate to Adapt: Open Set Domain Adaptation via Progressive Separation**. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.

Kaichao You, Mingsheng Long, **Zhangjie Cao**, Jianmin Wang, Michael I. Jordan. **Universal Domain Adaptation**. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.

Yang Shu, **Zhangjie Cao**, Mingsheng Long, Jianmin Wang. **Transferable Curriculum for Weakly-Supervised Domain Adaptation**. *AAAI Conference on Artificial Intelligence (AAAI)*, 2019.

Mingsheng Long, **Zhangjie Cao**, Jianmin Wang, Michael I. Jordan. **Conditional Adversarial Domain Adaptation**. *Neural Information Processing Systems (NIPS)* 2018.

Zhangjie Cao, Lijia Ma, Mingsheng Long, Jianmin Wang. **Partial Adversarial Domain Adaptation**. *European Conference on Computer Vision (ECCV)*, 2018.

Mingsheng Long, **Zhangjie Cao**, Jianmin Wang, Han Zhu, Michael I. Jordan. **Learning Transferable Visual Features with Very Deep Adaptation Networks**. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*.

Zhangjie Cao, Mingsheng Long, Ziping Sun, Jianmin Wang. **Deep Priority Hashing**. *ACM Multimedia Conference (ACM MM)*, 2018.

Zhangjie Cao, Mingsheng Long, Jianmin Wang, Michael I. Jordan. **Partial Transfer Learning with Selective Adversarial Networks**. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.

Zhangjie Cao, Mingsheng Long, Chao Huang, Jianmin Wang. **Transfer Adversarial Hashing for Hamming Space Retrieval**. *AAAI Conference on Artificial Intelligence (AAAI)*, 2018.

Zhongyi Pei[†], **Zhangjie Cao**[†], Mingsheng Long, Jianmin Wang. **Multi-Adversarial Domain Adaptation**. *AAAI Conference on Artificial Intelligence (AAAI)*, 2018. ([†]Equal Contribution)

Mingsheng Long, **Zhangjie Cao**, Jianmin Wang, Philip S. Yu. **Learning Multiple Tasks with Multilinear Relationship Networks**. *Neural Information Processing Systems (NIPS)*, 2017.

Zhangjie Cao, Mingsheng Long, Jianmin Wang, Philip S. Yu. **HashNet: Deep Learning to Hash by Continuation**. *International Conference on Computer Vision (ICCV)*, 2017.

Zhangjie Cao, Qixing Huang, Ramani Karthik. **3D Object Classification via Spherical Projections**. *International Conference on 3D Vision (3DV)*, 2017.

Zhangjie Cao, Mingsheng Long, Qiang Yang. **Transitive Hashing Network for Heterogeneous Multimedia Retrieval**. *AAAI Conference on Artificial Intelligence (AAAI)*, 2017. (Oral Presentation)

Research Experience

National Lab for Big Data Systems, School of Software, Tsinghua University

China

Mentor: Mingsheng Long

PROJECTS ON DEEP LEARNING TO HASH

Jan. 2016 - Nov. 2017

- Proposed a new cross-modal retrieval scenario without explicit relationship and a Transitive Hashing Network to solve it.
- Proposed HashNet with binary output and enable optimization of sign activation function by continuation method.
- Proposed Transfer Adversarial Hashing the first model focusing on cross-domain retrieval within Hamming Radius 2.
- Proposed Deep Focal Hashing (DFH) with priority loss to address the class imbalance and easy-hard imbalance problems.

National Lab for Big Data Systems, School of Software, Tsinghua University

China

Mentor: Mingsheng Long

PROJECTS ON DOMAIN ADAPTATION

Sept. 2016 - June. 2018

- Proposed a Multi-Adversarial Domain Adaptation to train multiple adversaries weighted by probability over classes.
- Proposed a new partial domain adaptation setting with source label space includes target and a selective adversarial network with multiple adversarial networks and both instance-level and class-level weights to address it.
- Further proposed a single adversarial network architecture to address partial domain adaptation

Department of Computer Science and Lewis-Sigler Institute of Integrative

U.S.A

Genomics, Princeton University

Mentor: Olga Troyanskaya

PROJECT: ALGORITHMS USING DEEP LEARNING FOR NONCODING VARIANTS RECOGNITION

July. 2016 - August. 2016

- Designed new architecture with multiple classifiers build on each convolutional layers to exploit low level features and solved the gradient vanishing problem of the original network.
- Considering the relation of different chromatin features (labels), I improved the classifying layer with low rank technical.
- The new architecture outperformed existing methods under standard evaluation criteria such as AUC of PR Curve and ROC Curve.

Department of Computer Science, The University of Texas at Austin

U.S.A

Mentor: Qixing Huang

PAPER: 3D OBJECT CLASSIFICATION VIA SPHERICAL PROJECTIONS

Feb. 2017 - May. 2017

- Proposed a spherical representation leveraging depth variation and contour information for 3D objects.
- Developed deep neural networks composing of two parts for depth and contour representation respectively to classify 3D objects.
- Implemented Spherical Projection in caffe framework and carefully designed experiments to compare our method with state of the art methods under standard evaluation criteria on large scale 3D Recognition Dataset.
- Wrote the first version of the paper under the supervision of my mentor.

Department of Computer Science, Stanford University

U.S.A

Mentor: Juan Carlos Niebles

PROJECT: VIDEO DOMAIN ADAPTATION

Nov. 2018 - March 2019

- Proposed cross-domain action recognition which recognizes actions of an unlabeled target domain with a labeled related source domain.
- Designed a co-attention module and a temporal-aligned adaptation module for global action distribution matching between domains.
- The method achieved significant performance and the paper has been submitted to ICCV 2019.

Department of Computer Science, Stanford University

U.S.A

Mentor: Juan Carlos Niebles

PROJECT: INTENT PREDICTION

Oct. 2018 - March 2019

- Address pedestrian intent prediction by modeling the relation between pedestrians and environment objects with spatiotemporal graph.
- The method achieved good results on real-world driving datasets and the paper has been submitted to ICCV 2019.

Department of Computer Science, Stanford University

U.S.A

Mentor: Stefano Ermon

PROJECT: ALIGNFLOW: CYCLE CONSISTENT LEARNING FROM MULTIPLE DOMAINS VIA

Oct. 2018 - Now

NORMALIZING FLOWS

- Proposed to use normalizing flows in generative model, which is flexible in loss (Adversarial training or Maximum likelihood estimation).
- AlignFlow guarantees exact cycle consistency in mapping datapoints from one domain to another.
- The paper has been submitted to NeurIPS 2019.

Department of Computer Science, Stanford University

U.S.A

Mentor: Stefano Ermon

PROJECT: OPEN SET SEMI-SUPERVISED LEARNING

Jan. 2019 - May 2019

- Proposed open set semi-supervised learning where the unlabeled data containing outlier data within classes not included labeled data.
- Investigated the influence of previous semi-supervised work from different parts of outlier data.
- Designed a method smartly combining previous semi-supervised works based on the analysis .
- The paper has been submitted to NeurIPS 2019.

Department of Computer Science, Stanford University

U.S.A

Mentor: Amir R. Zamir

PROJECT: CROSS-TASK CONSISTENCY

April 2019 - May 2019

- Proposed a flexible and fully computational framework for learning with consistency across an arbitrary dictionary of tasks.
- Proved that consistency constraints can improve the generalization power of the model to out-of-distribution data.
- The paper has been submitted to NeurIPS 2019.

Honors & Awards

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| 2015 | National Scholarship , Tsinghua University | China |
| 2015 | Best Project Award , Course of Architecture of Computer and Network | China |
| 2016 | Qualcomm Scholarship , Tsinghua University | China |
| 2018 | Rank 3 in Visual Domain Adaptation Challenge (VisDA-2018) , ECCV2018 Workshop Challenge (http://ai.bu.edu/visda-2018) | Munich, Germany |
| 2019 | Outstanding reviewers , CVPR 2019 | Long Beach, CA, USA |

Skills

- | | |
|--------------------|---|
| Programming | Proficient in Python, C/C++ , LaTeX and Matlab; Familiar with Lua, Bash, JAVA and Haskell |
| Framework | Proficient in Caffe and PyTorch; Familiar with Torch with Lua and Tensorflow |
| Languages | English, Chinese (native speaker) |