ZHANGJIE CAO

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Education

Stanford University   *U.S.A*
PH.D. OF COMPUTER SCIENCE   *September 2018 - Now*

Tsinghua University   *China*
BACHELOR OF SOFTWARE ENGINEERING   *September 2014 - July 2018*
- GPA: 91/100

Research Interests

Robotics, AI Safety, Machine Learning, Deep Learning, Computer Vision

Honors & Awards

2015	**National Scholarship (rank 1/64)**, Tsinghua University	*China*
2015	**Best Project Award (rank 1/56)**, 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*

Publications

1. **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.

2. 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.

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

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

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

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

7. 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**)*.

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

9. **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.

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

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

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

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

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

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

Technical Reports

External Reviewer for Conferences, Journals
Computer Vision: CVPR 2019-2020, ICCV 2019, IJCV 2019
Machine Learning: ICML 2019, NeurIPS 2019, ICLR 2020
Artificial Intelligence: AAAI 2020

Work Experience

Waymo LLC (self-driving company) *U.S.A*
Mentor: Yin Zhou
REALISTIC SCENE SIMULATION *June. 2019 - Sept. 2019*
- Work as a research intern on a project for realistic simulation of full scene to address simulation difficulty on rarely existing corner cases and novel objects, which has huge impact on Waymo.
- Propose a novel generative model to refine the fake input scene and generate realistic scene with the same semantic as the input.
- Writing the main part of the paper for the work and the paper is target for CVPR 2020.

Research Experience

Department of Computer Science, Stanford University *U.S.A*
Mentor: Dorsa Sadigh
PROJECT: HUMAN MODELING IN NEAR-ACCIDENT SCENARIOS *Aug 2019 - Nov 2019*
- Propose a method to model human driving behavior in near accident scenarios.
- Outperform imitation learning and hard-coded policies in aspects of comfort and safety.
- The work is targeted at L4DC 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.

Department of Computer Science, Stanford University *U.S.A*
Mentor: Stefano Ermon
PAPER: 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: Stefano Ermon
PAPER: ALIGNFLOW: CYCLE CONSISTENT LEARNING FROM MULTIPLE DOMAINS VIA
NORMALIZING FLOWS *Oct. 2018 - Now*

- 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: 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: 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, 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.

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

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.

Department of Computer Science and Lewis-Sigler Institute of Integrative Genomics, Princeton University

U.S.A

Mentor: Olga Troyanskaya

Project: Algorithms Using Deep Learning for Noncoding Variants Recognition

July. 2016 - August. 2016

- Designed new architecture with multiple classifiers builded 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.