Dingwen Zhang

NWPU & CMU

Research Interest

I am mainly interested in developing effective computer vision algorithms that are inspired by the human vision and human learning procedure. Currently, I am working on developing **weakly supervised learning** systems for computer vision tasks like **object detection**, **segmentation**, **3D shape reconstruction**. I also work on **computational visual attention** modeling and its application in computer vision tasks like **remote sensing imagery analysis** and **video content analysis**.

Research Highlights

10+ top conferences including 5 CVPR, 2 ICCV, 3 IJCAI;
10+ top journals including 1 T-PAMI, 1 IJCV, 2 T-IP, 2 T-CSVT, 1 T-CYB, 1 T-NNLS, 1 T-GRS;
2 year research experience in top-ranked Carnegie Mellon University;
3 ESI highly-cited and hot papers, totally 600+ citations with 10+ h-index
10+ awards and scholarships;
20+ cooperators and friends across the world.

Education

2013–2017 (Expected) **Ph.D. Student in Pattern Recognition and Machine Intelligence**, *Northwestern Polytechnical University*, Advisor: Prof. Junwei Han.
Thesis: Saliency Detection and Weakly Supervised Learning for Intelligent Visual Information Processing

2015–2017 **Visiting scholar in Robotic Institute**, *Carnegie Mellon University*, Host advisor: Prof. Fernando de la Torre.

2012–2013 **M.S. Student in Pattern Recognition and Machine Intelligence**, *Northwestern Polytechnical University*, Advisor: Prof. Lei Guo.

2008–2012 **B.S. Student in Automation**, *Northwestern Polytechnical University*.

Awards and scholarships

2016 The Innovative and Entrepreneurship Scholarship of the Chinese Ministry of Industry and Information Technology

2016 "Bao Gang" Excellent Student Award

2016 The "postgraduate pacesetter" of Northwestern Polytechnical University

2016 The postgraduate "Academic Star" of Northwestern Polytechnical University

2016 National Scholarship (rank 1st out of 35 students)

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https://zdw-nwpu.github.io/dingwenz.github.com/

2016 MSRA Fellowship Nomination Award

2016 Doctoral Consortium travel award of IJCAI

2015 National Scholarship (rank 1st out of 35 students)

2015 the Excellent Doctorate Foundation of Northwestern Polytechnical University

2014 the Doctorate Foundation of Northwestern Polytechnical University

2014 National Scholarship (rank 2nd out of 35 students)

2014 Outstanding prize for Graduate Students Entrepreneurial Seed Funding in Northwestern Polytechnical University

2013 National Scholarship (rank 3rd out of 263 students)

2012 Undergraduate thesis award in Shaanxi province (major of Automation)

2012 Excellent graduate student in the university (30 winners out of 317 students)

2011 Excellent Student in the university (top 10%)

Selective Publications

Peer-reviewed conference papers

ICCV'17 **Supervision by fusion: towards unsupervised learning of deep salient object detector**, ***Dingwen Zhang***, *Junwei Han, Yu Zhang*, In Proceedings of the International Conference on Computer Vision. 2017.

CVPR'17 **SPFTN: a self-paced fine-tuning network for segmenting objects in weakly labelled videos**, ***Dingwen Zhang***, *Le Yang, Deyu Meng, Dong Xu, Junwei Han*, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2017.

CVPR'17 **Learning category-specific 3D shape models from weakly labeled 2D images**, ***Dingwen Zhang***, *Junwei Han, Yang Yang, Dong Huang*, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2017.

CVPR'16 **Object co-segmentation via graph optimized-flexible manifold ranking**, *Rong Quan, Junwei Han,* ***Dingwen Zhang***, *Feiping Nie*, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2016.

ICCV'15 **A self-paced multiple-instance learning framework for co-saliency detection**, ***Dingwen Zhang***, *Deyu Meng, Chao Li, Lu Jiang, Qian Zhao, Junwei Han*, In Proceedings of the International Conference on Computer Vision, 2015.

CVPR'15 **Co-saliency detection via look- ing deep and wide**, ***Dingwen Zhang***, *Junwei Han, Chao Li, Jingdong Wang*, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2015.

CVPR'15 **Predicting eye fixations using convolutional neural networks**, *Nian Liu, Junwei Han,* ***Dingwen Zhang***, *Shifeng Wen, Tianming Liu*, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2015.

IJCAI'17 **Self-paced mixture of regression**, *Longfei Han,* ***Dingwen Zhang****(co-first author), Dong Huang, Xiaojun Chang, Senlin Luo, Jun Ren, Junwei Han*, In Proceedings of the International Joint Conference on Artificial Intelligence, 2017.

IJCAI'17 **How unlabeled web videos help complex event detection?**, *Huan Liu, Qinghua Zheng, Minnan Luo,* ***Dingwen Zhang****, Xiaojun Chang, Cheng Deng*, In Proceedings of the International Joint Conference on Artificial Intelligence, 2017.

IJCAI'16 **Bridging saliency detection to weakly supervised object detection based on self-paced curriculum learning**, ***Dingwen Zhang****, Deyu Meng, Long Zhao, Junwei Han*, In Proceedings of the International Joint Conference on Artificial Intelligence, 2016.

Peer-reviewed journal articles

TPAMI **Co-saliency detection via a self-paced multiple-instance learning framework**, ***Dingwen Zhang****, Deyu Meng, Junwei Han*, IEEE Transactions on Pattern Analysis and Machine Intelligence. 2017, 39(5): 865-878.

IJCV **Detection of co-salient objects by looking deep and wide**, ***Dingwen Zhang****, Junwei Han, Chao Li, Jingdong Wang, Xuelong Li*, International Journal of Computer Vision. 2016, 120(2): 215-232.

TIP **Revealing event saliency in unconstrained video collection**, ***Dingwen Zhang****, Junwei Han, Lu Jiang, Senmao Ye, Xiaojun Chang*, IEEE Transactions on Image Processing. 2017, 26(4): 1746-1758.

TIP **Revisiting co-saliency detection: a novel approach based on two-stage multi-view spectral rotation co-clustering**, *Xiwen Yao, Junwei Han,* ***Dingwen Zhang****, Feiping Nie*, IEEE Transactions on Image Processing. 2017, 26(7): 3196-3209.

TNNLS **Cosaliency detection based on intrasaliency prior transfer and deep intersaliency mining**, ***Dingwen Zhang****, Junwei Han, Jungong Han, Ling Shao*, IEEE Transactions on Neural Networks and Learning Systems. 2016, 27(6): 1163-1176.

TCYB **Two-stage learning to predict human eye fixations via SDAEs**, *Junwei Han(advisor),* ***Dingwen Zhang****, Shifeng Wen, Lei Guo, Tianming Liu, Xuelong Li*, IEEE Transactions on Cybernetics. 2016, 46(2): 487-498.

TGRS **Object detection in optical remote sensing images based on weakly supervised learning and high- level feature learning**, *Junwei Han(advisor),* ***Dingwen Zhang****, Gong Cheng, Lei Guo, Jinchang Ren*, IEEE Transactions on Geoscience and Remote Sensing. 2015, 53(6): 3325-3337.

TCSVT **Background prior-based salient object detection via deep reconstruction residual**, *Junwei Han(advisor),* ***Dingwen Zhang****, Xintao Hu, Lei Guo, Jinchang Ren, Feng Wu*, IEEE Transactions on Circuits and Systems for Video Technology. 2015, 25(8): 1309-1321.

TCSVT **A unified metric learning-based framework for co-saliency detection**, *Junwei Han, Gong Cheng, Zhenpeng Li,* ***Dingwen Zhang****(corresponding author)*, IEEE Transactions on Circuits and Systems for Video Technology. 2017, online published.

JPRS **Efficient, simultaneous detection of multi-class geospatial targets based on visual saliency modeling and discriminative learning of sparse coding**, *Junwei Han, Peicheng Zhou,* ***Dingwen Zhang****, Gong Cheng, Lei Guo, Zhenbao Liu, Shuhui Bu, Jun Wu*, ISPRS Journal of Photogrammetry and Remote Sensing. 2014, 89: 37-48.

GRSL **Weakly supervised learning for target detection in remote sensing images**, ***Dingwen Zhang***, *Junwei Han, Gong Cheng, Zhenbao Liu, Shuhui Bu, Lei Guo*, IEEE Geoscience and Remote Sensing Letters. 2015, 12(4): 701-705.

Academic Services

Conference reviewer

Neural Information Processing Systems (NIPS).

Journal reviewer

IEEE Trans on Neural Networks and Learning Systems (TNNLS).
IEEE Trans on Circuits and Systems for Video Technology (TCSVT) .
IEEE Trans on Image Processing (TIP) .
IEEE Trans on Cybernetics (TCYB) .
IEEE Signal Processing Letters (SPL) .
ELSEVIER Neurocomputing .
ELSEVIER Signal Processing: Image Communication .
ELSEVIER Automation in Construction .
Springer Machine Vision and Applications .
SPIE Journal of Electronic Imaging .

Mentoring Experiences

2016-present **Yujia Zhang** , *Visiting Scholar*, Carnegie Mellon University.
Project: Unsupervised video summarization

2016-present **Yu Zhang** , *B.S.Student*, Northwestern Polytechnical University.
Project: Unsupervised learning of deep salient object detector

2016-present **Yang Yang** , *Ph.D Student*, Northwestern Polytechnical University.
Project: 3D object reconstruction

2015-present **Le Yang** , *M.S. and Ph.D Student*, Northwestern Polytechnical University.
Project: Weakly supervised video object segmentation

2015-present **Long Zhao** , *M.S. Student*, Northwestern Polytechnical University.
Project: Weakly supervised object localization and detection

2015-present **Rong Quan** , *Ph.D Student*, Northwestern Polytechnical University.
Project: Object co-segmentation

2014-2015 **Chao Li** , *M.S. Student*, Northwestern Polytechnical University.
Project: Co-saliency detection