

# WENHAI WANG

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Homepage: <https://whai362.github.io>

## EDUCATION

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**Nanjing University**, Nanjing, China Sep. 2016 - Present  
*Ph.D. candidate* in Computer Science and Technology, *Supervised by Prof. Tong Lu.*

**Nanjing University of Science and Technology**, Nanjing, China Sep. 2012 - Jun. 2016  
*B.E. in Software Engineering.*

## RESEARCH INTERESTS

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- Optical Character Recognition [1, 3, 4, 5, 16]
- Deep Neural Networks Exploration [2, 8, 6]
- Object Detection / Instance Segmentation [7, 9, 10, 14, 11]

## EXPERIENCE

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Github: <https://github.com/whai362>

**The University of Hong Kong**, Hongkong, China Oct. 2019 - Mar. 2020  
Research Assistant, *Supervised by Dr. Ping Luo*

- **One-stage Instance Segmentation.** Proposed an anchor-box free and single shot instance segmentation method, termed PolarMask, which formulates the instance segmentation problem as instance center classification and dense distance regression in a polar coordinate. This work *PolarMask: Single Shot Instance Segmentation with Polar Representation* is accepted by CVPR 2020.

**SenseTime**, Beijing, China Aug. 2019 - Mar. 2020  
Research Intern, *Supervised by Xuebo Liu and Ding Liang*

- **Optical Character Recognition.** Did research on text detection and recognition in natural scenes, and tried to 1) solve the ambiguity in text detection and 2) design a real-time algorithm for arbitrary-shaped text detection and recognition. Papers on both topics are in preparation.

**Momenta**, Beijing, China Jun. 2018 - Dec. 2018  
Research Intern, *Supervised by Dr. Xiang Li*

- **Deep Neural Networks Exploration.** Did research on the receptive fields of CNNs, and designed a dynamic selection mechanism in CNNs that allows each neuron to adaptively adjust its receptive field. This work *Selective Kernel Networks* is accepted by CVPR 2019.
- **Object Detection.** Led a team to take part in Autonomous Driving Perception Task in AI Challenger 2018. Re-implemented and improved Cascade R-CNN to detect objections in autonomous driving scenarios. Our team finally secured the 2<sup>nd</sup> place in the task.

## CONTESTS

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- National Artificial Intelligence Challenge (NAIC) 2020 , Remote Sensing Semantic Segmentation Task, **1<sup>st</sup> Place, 1,000,000 RMB** Nov. 2020
- ICDAR2019 Robust Reading Challenge on Arbitrary-Shaped Text, Task1, **1<sup>st</sup> Place** May 2019
- ICDAR2019 Robust Reading Challenge on Large-scale Street View Text with Partial Labeling, Task1, **2<sup>nd</sup> Place** Jun. 2019
- AI Challenger 2018 Autonomous Driving Perception Task, **2<sup>nd</sup> Place, 40,000 RMB** Dec. 2018
- ACM-ICPC Asia Regional Contest, **Silver Medal** Nov. 2015

## HONORS AND AWARDS

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- National Scholarship (top 1%)

Oct. 2019

## PUBLICATIONS

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Google Scholar: <https://scholar.google.com/citations?user=WM00glcAAAAJ>

### Top-Tier Computer Vision Journal/Conference Papers

- [1] **W. Wang**, E. Xie, X. Li, et al. *PAN++: Towards Efficient and Accurate End-to-End Spotting of Arbitrarily-Shaped Text*, in IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021.
- [2] **W. Wang**, X. Li, T. Lu, et al. *Mixed Link Networks*, in International Joint Conference on Artificial Intelligence (IJCAI), Stockholm, Sweden, 2018.
- [3] **W. Wang**, E. Xie, X. Li, et al. *Shape Robust Text Detection with Progressive Scale Expansion Network*. in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, CA, USA, 2019.
- [4] **W. Wang**, E. Xie, X. Song, et al. *Efficient and Accurate Arbitrary-Shaped Text Detection with Pixel Aggregation Network*, in IEEE International Conference on Computer Vision (ICCV), Seoul, Korea, 2019.
- [5] **W. Wang**, X. Liu, X. Ji, et al. *AE TextSpotter: Learning Visual and Linguistic Representation for Ambiguous Text Spotting*, in the European Conference on Computer Vision (ECCV), Online, 2020.
- [6] **W. Wang**, E. Xie, X. Li, et al. *Pyramid Vision Transformer: A Versatile Backbone for Dense Prediction without Convolutions*, in IEEE International Conference on Computer Vision (ICCV), Virtual, 2021.
- [7] E. Xie, **W. Wang**, M. Ding, et al. *PolarMask++: Enhanced Polar Representation for Single-Shot Instance Segmentation and Beyond*, in IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021.
- [8] X. Li, **W. Wang**, X. Hu, et al. *Selective Kernel Networks*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, CA, USA, 2019.
- [9] X. Li, **W. Wang**, L. Wu, et al. *Generalized Focal Loss: Learning Qualified and Distributed Bounding Boxes for Dense Object Detection*, in Advances in Neural Information Processing Systems (NeurIPS), 2020.
- [10] X. Li, **W. Wang**, X. Hu, et al. *Generalized Focal Loss V2: Learning Reliable Localization Quality Estimation for Dense Object Detection*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Virtual, 2021.
- [11] E. Xie, J. Ding, **W. Wang**, et al. *Detco: Unsupervised contrastive learning for object detection*, in IEEE International Conference on Computer Vision (ICCV), Virtual, 2021.
- [12] E. Xie, W. Wang, **W. Wang**, et al. *Segmenting Transparent Objects in the Wild*, in the European Conference on Computer Vision (ECCV), Online, 2020.
- [13] E. Xie, W. Wang, **W. Wang**, et al. *Segmenting Transparent Object in the Wild with Transformer*, in International Joint Conference on Artificial Intelligence (IJCAI), Montreal, Canada, 2021.
- [14] E. Xie, P. Sun, X. Song, **W. Wang**, et al. *PolarMask: Single Shot Instance Segmentation with Polar Representation*, in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Seattle, Washington, USA, 2020.
- [15] S. Jin, W. Liu, E. Xie, **W. Wang**, et al. *Differentiable Hierarchical Graph Grouping for Multi-Person Pose Estimation*, in the European Conference on Computer Vision (ECCV), Online, 2020.
- [16] W. Wang, E. Xie, X. Liu, **W. Wang**, et al. *Scene Text Image Super-Resolution in the Wild*, in the European Conference on Computer Vision (ECCV), Online, 2020.

## ACADEMIC SERVICE

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### Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Image Processing (TIP)
- Reviewer of IEEE Transactions on Multimedia (TMM)
- Computational Visual Media Journal (CVM)

### (Senior) Program Committee Member/Conference Reviewer

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020, 2021, 2022
- Neural Information Processing Systems (NeurIPS), 2020, 2021

- International Conference on Machine Learning (ICML), 2021
- International Conference on Learning Representations (ICLR), 2021
- IEEE International Conference on Computer Vision (ICCV), 2021
- International Joint Conference on Artificial Intelligence (IJCAI), 2021, 2022
- Asian Conference on Computer Vision 2020 (ACCV), 2020
- IEEE Winter Conference on Applications of Computer Vision (WACV), 2021