# Zilong Huang

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## EDUCATION

**Huazhong University of Science and Technology** **Wuhan, China**
*Ph.D student in Computer Vision and Machine Learning* *2015.9–2020.12*
*Advisor: Wenyu Liu, Xinggang Wang*

**University of Illinois at Urbana-Champaign** **Urbana, USA**
*Joint-training Ph.D student in Computer Vision and Machine Learning* *2018.10–2019.10*
*Advisor: Thomas Huang, Yunchao Wei, Humphrey Shi*

**Huazhong University of Science and Technology** **Wuhan, China**
*B.S. in Electronic Information Engineering* *2011.9–2015.6*
*Dian Group, Seed Class*

## RESEARCH INTERESTS

Image/video understanding and generation, Multi-modal learning, Efficient network design.

## EXPERIENCES

**Tencent** **Shanghai, China**
*Senior Researcher* *Jan 2021 - Mar 2023*

- conduct cutting-edge research: Mobile Transformer(CVPR22, ICLR23), NeRF(NeurIPS22), Text-to-Motion(CVPR 2023), DPT Pretraining...
- ship algorithms into productions: design mobile transformers as backbone for Virtual Human Technology, which has been deployed into QQ Live and QQ video call.
- Two champions of Monocular Depth Estimation and Short-video Face Parsing Challenges.

## PUBLICATIONS

**Executing your Commands via Motion Diffusion in Latent Space. CVPR 2023.**
*Xin Chen, Biao Jiang, Wen Liu, **Zilong Huang**, Bin Fu, Tao Chen, Jingyi Yu, Gang Yu.*

**SeaFormer: Squeeze-enhanced Axial Transformer for Mobile Semantic Segmentation. ICLR 2023.**
*Qiang Wan, **Zilong Huang**, Jiachen Lu, Gang Yu, Li Zhang.*

**DCNet: Large-scale Point Cloud Semantic Segmentation with Discriminative and Efficient Feature Aggregation. TCSVT 2023.**
*Fukun Yin, **Zilong Huang**, Tao Chen, Guozhong Luo, Gang Yu, Bin Fu.*

**Coordinates are not lonely-Codebook Prior Helps Implicit Neural 3D Representations. NeurIPS 2022.**
*Fukun Yin, Wen Liu, **Zilong Huang**, Pei Cheng, Tao Chen, Gang Yu.*

**TopFormer: Token Pyramid Transformer for Mobile Semantic Segmentation. CVPR 2022.**
*Wenqiang Zhang*, **Zilong Huang***, Gang Yu, Tao Chen, Guozhong Luo, Xinggang Wang, Wenyu Liu, Chunhua Shen.*

**Shuffle Transformer: Rethinking Spatial Shuffle for Vision Transformer. ArXiv 2021.**
***Zilong Huang**, Youcheng Ben, Guozhong Luo, Pei Cheng, Gang Yu, Bin Fu.*

**Shuffle Transformer with Feature Alignment for Video Face Parsing. CVPRW 2021.**

*Rui Zhang, Yang Han,* ***Zilong Huang****, Pei Cheng, Guozhong Luo, Gang Yu, Bin Fu.*
*Ranked No. 1 of Short-video Face Parsing Track of The 3rd Person in Context (PIC) Challenge 2021.*

**A Simple Baseline for Fast and Accurate Depth Estimation on Mobile Devices. CVPRW 2021.**
*Ziyu Zhang, Yicheng Wang,* ***Zilong Huang****, Guozhong Luo, Gang Yu, Bin Fu.*
*Ranked No. 1 of MAI Monocular Depth Estimation Challenge 2021.*

**Human De-occlusion: Invisible Perception and Recovery for Humans. CVPR 2021.**
*Qiang Zhou, Shiyin Wang, Yitong Wang,* ***Zilong Huang****, Xinggang Wang.*

**Half-Real Half-Fake Distillation for Class-Incremental Semantic Segmentation. ArXiv 2021.**
***Zilong Huang****, Wentian Hao, Xinggang Wang, Mingyuan Tao, Jianqiang Huang, Wenyu Liu, XianSheng Hua.*

**High-Resolution Deep Image Matting. AAAI 2021.**
*Haichao Yu, Ning Xu,* ***Zilong Huang****, Yuqian Zhou, Humphrey Shi.*

**AlignSeg: Feature-Aligned Segmentation Networks. TPAMI 2021.**
***Zilong Huang****, Yunchao Wei, Xinggang Wang, Wenyu Liu, Thomas Huang, Humphrey Shi.*

**Deep learning-based automated image segmentation for concrete petrographic analysis. CCR 2020.**
*Yu Song,* ***Zilong Huang****, Chuanyue Shen, Humphrey Shi, David A Lange.*

**CCNet: Criss-Cross Attention for Semantic Segmentation. TPAMI 2020.**
***Zilong Huang****, Xinggang Wang, Yunchao Wei, Lichao Huang, Humphrey Shi, Wenyu Liu, Thomas Huang.*

**Agriculture-Vision: A Large Aerial Image Database for Agricultural Pattern Analysis. CVPR 2020**
*Mang Tik Chiu, Xingqian Xu, Yunchao Wei,* ***Zilong Huang****, Alexander Schwing, Robert Brunner, Hrant Khachatrian, Hovnatan Karapetyan, Ivan Dozier, Greg Rose, David Wilson, Adrian Tudor, Naira Hovakimyan, Thomas S Huang, Humphrey Shi*

**Motion-Guided Spatial Time Attention for Video Object Segmentation. ICCVW 2019.**
*Qiang Zhou,* ***Zilong Huang****, Lichao Huang, Yongchao Gong, Han Shen, Wenyu Liu, Xinggang Wang.*
*Ranked No. 2 of Youtube Video Object Segmentation Challenge 2019.*

**Semantic Image Segmentation by Scale-Adaptive Networks. TIP 2019.**
***Zilong Huang****, Chunyu Wang, Xinggang Wang, Wenyu Liu, Jingdong Wang.*

**CCNet: Criss-Cross Attention for Semantic Segmentation. ICCV 2019.**
***Zilong Huang****, Xinggang Wang, Lichao Huang, Chang Huang, Yunchao Wei, Wenyu Liu.*
*More than 1700 citations, 1.3k stars on Github. PaperDigest Most Influential ICCV 2019 papers (5th-Place). Applications of CCNet also include AlphaFold2.*

**SPGNet: Semantic Prediction Guidance for Scene Parsing. ICCV 2019.**
*Bowen Cheng, Liang-Chieh Chen, Yunchao Wei, Yukun Zhu,* ***Zilong Huang****, Jinjun Xiong, Thomas Huang, Wen-Mei Hwu, Humphrey Shi.*

**Devil in the Details: Towards Accurate Single and Multiple Human Parsing. AAAI 2019.**
*Tao Ruan*, Ting Liu*,* ***Zilong Huang****, Yunchao Wei, Shikui Wei, Yao Zhao, Thomas Huang.*
*Ranked No. 1 on all human parsing tracks in the 2nd LIP Challenge 2018.*

**Proposal,Tracking&Segmentation:A Cascaded Network for Video Object Segmentation.ECCVW 2018.**
***Zilong Huang****, Qiang Zhou*, Xinggang Wang, Yongchao Gong, Han Shen, Lichao Huang, Chang Huang, Wenyu Liu.*
*Ranked No. 2 of Youtube Video Object Segmentation Challenge 2018.*

**A PyTorch Semantic Segmentation Toolbox. Technical report 2018.**
***Zilong Huang****, Yunchao Wei, Xinggang Wang, Wenyu Liu.*

**Weakly-supervised semantic segmentation network with deep seeded region growing. CVPR 2018.**
***Zilong Huang****, Xinggang Wang, Jiasi Wang, Wenyu Liu, Jingdong Wang.*

**Object-level proposals. ICCV 2017.**
*Jianxiang Ma, Anlong Ming,* ***Zilong Huang****, Xinggang Wang, Yu Zhou.*

**Deep patch learning for weakly supervised object classification and discovery. PR 2017.**
*Peng Tang, Xinggang Wang, **Zilong Huang**, Xiang Bai, Wenyu Liu.*

## ACADEMIC ACTIVITIES

- Talk at Fudan University: "TopFormer: Token Pyramid Transformer for Mobile Semantic Segmentation", 2022.
- CVPR21 the 3rd Person in Context (PIC) Workshop talk: "Shuffle Transformer with Feature Alignment for Video Face Parsing", 2021.
- ECCV18 Large-scale Video Object Segmentation Challenge Workshop talk: "Proposal Tracking and Segmentation (PTS): A cascaded network for video object segmentation", 2018.
- VALSE Pixel Level Image Understanding Workshop talk: "Weakly-Supervised Semantic Segmentation Network with Deep Seeded Region Growing", 2018.
- Reviewer for the following journals/conferences: TPAMI/IJCV/TIP/TCSVT/Neurocomputing/CVPR/ICCV/ECCV/ICLR/ACCV/WACV/AAAI.

## AWARDS AND ACHIEVEMENTS

- Outstanding Contributor for shipping Mobile Transformer into the production, Tencent, 2022.
- Excellent Doctoral Dissertation Award, China Society of Image and Graphics (CSIG) 2021.
- Global Top 100 Chinese Rising Stars in Artificial Intelligence, Baidu, 2021.
- 1st Place in the MAI Monocular Depth Estimation Challenge in conjunction with CVPR 2021.
- 1st Place in the Short-video Face Parsing Track of The 3rd Person in Context (PIC) Workshop in conjunction with CVPR 2021.
- 2nd Place in the 2st Large-scale Video Object Segmentation Challenge Workshop in conjunction with ICCV 2019.
- 2nd Place in the 1st Large-scale Video Object Segmentation Challenge Workshop in conjunction with ECCV 2018.
- National Ph.D. Scholarship, Ministry of Education, China, 2019.
- Zhixing Graduate Student Scholarship, HUST, 2019.
- Outstanding Graduate, HUST, 2015.

## SKILLS

- **Programming**: Reasonably familiar with Python, Java, C/C++ and CUDA. Good spirit of open source with >3K stars in Github.
- **Computer vision and machine learning**: Familiar with several CV/ML algorithms including semantic segmentation, object detection/recognition, pose estimation, video object segmentation and convolutional neural networks. Proficient in deep learning framework Caffe and Pytorch, as well as general purpose libraries including OpenCV, scikit-learn and VLFeat.
- **Natural languages**: Mandarin (Native); English (Familiar).