

Sucheng Ren

South China University of Technology

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Education

South China University of Technology

MASTER OF COMPUTER SCIENCE

- National Scholarship (Top 1%).

Guangzhou, China

Sep. 2020 – now

South China University of Technology

BACHELOR OF COMPUTER SCIENCE

- GPA: 3.72/4.0

Guangzhou, China

Sep. 2016 – Aug. 2020

Internship

National University of Singapore

- Work with Prof. Jiashi Feng in Transformer.

Oct. 2021 – now

Johns Hopkins University

- Work with Prof. Alan Yuille and Dr. Cihang Xie in Self-Supervised Learning.

Jun. 2021 – Dec. 2021

Tsinghua University

- Work with Prof. Hang Zhao in Multimodal Learning.

Nov. 2020 – Jun. 2021

Publications

CVPR*6, ECCV*1, ICCV*1

Sucheng Ren, Daquan Zhou, Shengfeng He, Jiashi Feng, Xinchao Wang. "Shunted Self-Attention via Multi-Scale Token Aggregation", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR2022**)

Sucheng Ren, Huiyu Wang, Zhengqi Gao, Shengfeng He, Alan Yuille, Yuyin Zhou, Cihang Xie. "A Simple Data Mixing Prior for Improving Self-Supervised Vision Transformer", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR2022**)

Sucheng Ren, Zhengqi Gao, Tianyu Hua, Zihui Xue, Yonglong Tian, Shengfeng He, Hang Zhao. "Co-advise: Cross Inductive Bias Distillation", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR2022**)

Zihui Xue, **Sucheng Ren**, Zhengqi Gao, Hang Zhao "Multimodal Knowledge Expansion", International Conference on Computer Vision (**ICCV2021**)

Tianyu Hua, Wenxiao Wang, Zihui Xue, **Sucheng Ren**, Yue Wang, Hang Zhao "Feature Decorrelation for Self-supervised Learning", International Conference on Computer Vision (**ICCV2021**) (**Oral, Acceptance 3.0%**)

Sucheng Ren, Yong Du, Jianming Lv, Guoqiang Han, Shengfeng He. "Learning from the Master: Distilling Cross-modal Advanced Knowledge for Lip Reading", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR2021**)

Sucheng Ren, Wenxi Liu, Yongtuo Liu, Haoxin Chen, Guoqiang Han, Shengfeng He. "Reciprocal Transformations for Unsupervised Video Object Segmentation", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR2021**)

Haoxin Chen, Hanjie Wu, Nanxuan Zhao, **Sucheng Ren**, Shengfeng He "Delving Deep into Many-to-many Attention for Few-shot Video Object Segmentation", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR2021**)

Sucheng Ren, Chu Han, Xin Yang, Guoqiang Han, and Shengfeng He. "TENet: Triple Excitation Network for Video Salient Object Detection", European Conference on Computer Vision (**ECCV2020**) (**Spotlight, Acceptance 5.0%**)

Sucheng Ren, Daquan Zhou, Shengfeng He, Jiashi Feng, Xinchao Wang. "Shunted Self-Attention via Multi-Scale Token Aggregation", In submission.

Sucheng Ren, Zhengqi Gao, Tianyu Hua, Yonglong Tian, Zihui Xue, Shengfeng He, and Hang Zhao. "Co-advise: Cross Inductive Bias Distillation", In submission.

Sucheng Ren, Qiang Wen, Nanxuan Zhao, Yongtuo Liu, Liangyu Chai, Guoqiang Han, Shengfeng He "Unifying Global-Local Representations in Salient Object Detection with Transformer" In submission to IEEE Transaction on Image Processing (TIP).

Sucheng Ren, Wenxi Liu, Jianbo Jiao, Guoqiang Han, and Shengfeng He. "Edge Distraction-aware Salient Object Detection", In submission to IEEE Transaction on Learning System and Neural Network (TNNLS).

Zhengqi Gao, **Sucheng Ren**, Zihui Xue, Siting Li, Hang Zhao "Training-Free Robust Multimodal Learning via Sample-Wise Jacobian Regularization." In submission.

Yongtuo Liu, **Sucheng Ren**, Liangyu Chai, Hanjie Wu, Dan Xu, Jing Qin, Shengfeng He "Break the Image-level Chain: Exploit Spatial Labeling Redundancy for Semi-supervised Crowd Counting", In submission to IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

Yongtuo Liu, **Sucheng Ren**, Dan Xu, Hanjie Wu, Hongmin Cai, Shengfeng He, "Fine-grained Domain Adaptive Crowd Counting via Point-derived Segmentation", In submission to IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

Liangyu Chai, Wenxi Liu, Yongtuo Liu, **Sucheng Ren**, Jing Qin, Shengfeng He "Glance to Count: Learning to Rank with Anchors for Weakly-supervised Crowd Counting", In submission to IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

Completed Research Projects

TENet: Triple Excitation Network for Video Salient Object Detection.

SCUT

COMPUTER VISION LAB, SUPERVISOR: SHENGFENG HE

Jun. 2019 – March. 2020

- Proposed a spatial-temporal excitation mechanism to solve the saliency shifting problem and to enable accurate temporal features extraction.
- The developed excitation mechanism could be updated in an online manner so it could refine itself during the testing phase.
- Achieved new state-of-the-art on common used salient object detection and video salient object detection benchmarks.
- The corresponding paper was published on **ECCV2020** as a **spotlight** paper.

Knowledge Distilling for Cross-modal Lip Reading

SCUT

COMPUTER VISION LAB, SUPERVISOR: SHENGFENG HE

Feb. 2020 – Oct. 2020

- Proposed to transfer lip reading knowledge from audio to video model based on the observation that audio greatly outperforms video models.
- Built a co-evolving teacher model to adaptively bridge the inherent cross-modal gap between video and audio model.
- Incorporated a couple of teacher networks, trained respectively pretrained by audio and video data, to mimic the modality characteristics and offer the cross-modality information.
- The corresponding paper is accepted by **CVPR'2021**.

Reciprocal Transformations for Unsupervised Video Object Segmentation

SCUT

COMPUTER VISION LAB, SUPERVISOR: SHENGFENG HE

Feb. 2020 – Oct. 2020

- Proposed a reciprocal transformation to identify primary objects from distracting co-moving outliers in the input video.
- The reciprocal transformation promotes both the in-domain and cross-domain feature interactions in and the mutual evolution & integration of appearance and motion representations.
- The corresponding paper is accepted by **CVPR'2021**.

Edge Distraction-aware Salient Object Detection

SCUT

COMPUTER VISION LAB, SUPERVISOR: SHENGFENG HE

Aug. 2019 – Sep. 2020

- Proposed a distraction-aware edge features extraction module to avoid noisy edge distraction.
- Designed a boundary-filling loss that can automatically fill noncontinuous edges for better edge feature extraction.
- Built a cross-scale holistic contrast features extraction module that explored long-range relations cross different feature scale.
- Achieved new state-of-the-art on 6 salient object detection benchmarks.
- The corresponding paper is in submission to TNNLS.

Academic Activities

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|-------------|-----------------------------------------------------------------------------------|
| 2021 | Reviewer for ICLR 2022 and CVPR 2022 |
| 2021 | Teaching Assistant: Machine Learning |
| 2020 | Teaching Assistant: Image Processing and Computer Vision |
| 2021 | Presenter: "Vision Transformer and its variants" in SCUT computer vision workshop |
| 2020 | Presenter: "Deep Generative Model" in SCUT computer vision workshop |

Honors & Awards

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|-------------|--------------------------------------------------|
| 2021 | Tencent Scholarship |
| 2021 | China National Scholarship for Graduate Student |
| 2021 | South China University of Technology scholarship |
| 2020 | South China University of Technology scholarship |
| 2019 | South China University of Technology scholarship |
| 2017 | South China University of Technology scholarship |

Skills

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|--------------------|------------------------------------------------------------------|
| Programming | Python, C, C++, Java, PyTorch, Tensorflow, LaTeX |
| English | IELTS 7.0: Listening 8.0, Reading 7.0, Writing 6.0, Speaking 6.0 |