Sucheng **Ren**

South China University of Technology

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Education

Johns Hopkins University   *Baltimore, Maryland*
DOCTOR OF COMPUTER SCIENCE   *Aug. 2023 – now*
- Working on Transformer and Self-supervised Learning under the supervision of Prof. Alan Yuille

South China University of Technology   *Guangzhou, China*
MASTER OF COMPUTER SCIENCE   *Sep. 2020 – Jun. 2022*
- National Scholarship (Top 1%).

South China University of Technology   *Guangzhou, China*
BACHELOR OF COMPUTER SCIENCE   *Sep. 2016 – Aug. 2020*
- GPA: 3.72/4.0

Intership

Microsoft Research Asia   *April. 2022 – June, 2023*
- Work with Dr. Han Hu in self-supervised learning.

National University of Singapore   *Dec. 2021 – April. 2022*
- Work with Prof. Jiashi Feng in Transformer.

Johns Hopkins University   *Jun. 2021 – Dec. 2021*
- Work with Prof. Alan Yuille and Dr. Cihang Xie in Self-Supervised Learning.

Publications

CVPR*8, ECCV*3, ICCV*2, ICLR*2, TPAMI*1

Sucheng Ren, Xingyi Yang, Songhua Liu, Xinchao Wang. "SG-Former: Self-guided Transformer with Evolving Token Reallocation", International Conference on Computer Vision **(ICCV2023)**

Sucheng Ren, Fangyun Wei, Zheng Zhang, Han Hu. "TinyMIM: An Empirical Study of Distilling MIM Pre-trained Models", IEEE Conference on Computer Vision and Pattern Recognition **(CVPR2023)**

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) (Oral)**

Sucheng Ren, Huiyu Wang, Zhengqi Gao, Shengfeng He, Alan Yuille, Yuyin Zhou, Cihang Xie. "A Simple Data Mixing Prior for Improving Self-Supervised Learning", 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%)**

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", 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

Now	Reviewer for CVPR, ICCV, ECCV, Neurips, ICML, AAAI, MICCAI
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

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

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