LEI KE

HKUST, Clear Water Bay, Kowloon, Hong Kong

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EDUCATION

The Hong Kong University of Science and Technology (HKUST)   *Sept 2019 - Present*
Ph.D. Student in Computer Vision, Computer Science and Engineering
Advisor: Prof.Chi-Keung TANG, IEEE Fellow

ETH Zürich, Switzerland   *Jan 2021 - Present*
Visiting Ph.D. Student in Computer Vision Lab
Advisor: Prof.Fisher Yu

Wuhan University, China   *Sept 2014 - June 2018*
Bachelor of Software Engineering, Computer Science School   GPA: 3.65/4.0, Top 5%

RESEARCH INTEREST

- Instance Segmentation & Object Tracking
- Scene Understanding and Reconstruction

PUBLICATIONS

Mask Transfiner for High-Quality Instance Segmentation.
Lei Ke, Martin Danelljan, Xia Li, Yu-Wing Tai, Chi-Keung Tang, Fisher Yu.
IEEE Conf. on Computer Vision and Pattern Recognition (**CVPR**), 2022.

Prototypical Cross-Attention Networks for Multiple Object Tracking and Segmentation.
Lei Ke, Xia Li, Martin Danelljan, Yu-Wing Tai, Chi-Keung Tang, Fisher Yu.
Advances in Neural Information Processing Systems (**NeurIPS**), 2021
Spotlight presentation.

Occlusion-Aware Video Object Inpainting.
Lei Ke, Yu-Wing Tai, Chi-Keung Tang.
IEEE International Conf. in Computer Vision (**ICCV**), 2021.

Deep Occlusion-Aware Instance Segmentation with Overlapping BiLayers.
Lei Ke, Yu-Wing Tai, Chi-Keung Tang.
IEEE Conf. on Computer Vision and Pattern Recognition (**CVPR**), 2021.

GSNet: Joint Vehicle Pose and Shape Reconstruction with Geometrical and Scene-aware Supervision.
Lei Ke, Shichao Li, Yanan Sun, Yu-Wing Tai, Chi-Keung Tang.
The European Conf. on Computer Vision (**ECCV**), 2020.

Commonality-Parsing Network across Shape and Appearance for Partially Supervised Instance Segmentation.
Qi Fan*, **Lei Ke***, Wenjie Pei, Chi-Keung Tang, Yu-Wing Tai.
The European Conf. on Computer Vision (**ECCV**), 2020.
* denotes equal contribution.

Cascaded Deep Monocular 3D Human Pose Estimation with Evolutionary Training Data.
Shichao Li, **Lei Ke**, Kevin Pratama, Yu-Wing Tai, Chi-Keung Tang, Kwang-Ting Cheng.
IEEE Conf. on Computer Vision and Pattern Recognition (**CVPR**), 2020.
Oral presentation.

Reflective Decoding Network for Image Captioning.
Lei Ke, Wenjie Pei, Ruiyu Li, Xiaoyong Shen, Yu-Wing Tai.
IEEE International Conf. in Computer Vision (**ICCV**), 2019.

Memory-Attended Recurrent Network for Video Captioning.
Wenjie Pei, Jiyuan Zhang, Xiangrong Wang, **Lei Ke**, Xiaoyong Shen and Yu-Wing Tai.
IEEE Conf. on Computer Vision and Pattern Recognition (**CVPR**), 2019.

EXPERIENCE

ETH Zürich, Zürich | Visiting PhD Student *Jan 2021 - Present*
Advisor: Prof.Fisher Yu and Dr.Martin Danelljan

Working on image & video instance segmentation. Also, Multiple Object Tracking and Segmentation (MOTS) in autonomous driving. The efficient video instance segmentation work PCAN is accepted by NeurIPS 2021, while the high-quality instance segmentation method is published CVPR 2022.

HKUST, Hong Kong | PhD Student *Sept 2019 - Present*
Advisor: Prof.Chi-Keung TANG and Prof.Yu-Wing TAI

Worked on 3D traffic scene reconstruction (including joint vehicle pose and dense shape reconstruction from monocular image) & 2D instance segmentation under the partially supervised setting. Both the proposed GSNet and CPMask have been accepted by ECCV 2020. BCNet for occlusion-aware instance segmentation is accepted by CVPR 2021. VOIN for occlusion-aware object inpainting is accepted by ICCV 2021.

Tencent Youtu X-Lab, Shenzhen | Reseach Intern *Nov 2017 - Aug 2019*
Advisor: Prof.Yu-Wing TAI

Worked on image and video captioning. Proposed the Reflective Decoding Network (RDN) for image captioning, accepted by ICCV2019, which enhances both the long sequence dependency and position perception of words in a caption decoder, achieving the state-of-the-art performance in both standard and complicated image captioning.

Alibaba Group, Hangzhou | Engineering Intern *June 2017 - Oct 2017*
Worked on the product data mining and recommendation system for Taobao department.

Wuhan University, Wuhan | Research Assistant *May 2016 - Feb 2017*
Advisor: Prof.Xiaohui Cui

Utilized traditional machine learning algorithms to conduct the sentiment analysis with social media data.

AWARDS

- Research Travel Grant, HKUST   *2019*
- Postgraduate Studentship, HKUST   *2019-present*
- COMAP's Mathematical Contest in Modeling, Honorable Prize.   *2017*
- Excellent Student Scholarship, Wuhan University   *2015-2017*
- National Software Design Competition, Second Prize.   *2017*
- National Inspirational Scholarship, Wuhan University   *2016*
- National College Students' Mathematics Competition, Third Prize   *2015*

SKILLS AND INTERESTS

- Deep Learning Platform: PyTorch, TensorFlow, Caffe and MXNet
- Language: Mandarin(native), English(fluent)
- Programming Language: Python, C/C++, Java, C#, JavaScript.