

Shichao Li

Curriculum Vitae

HKUST, Clear Water Bay
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"All models are wrong but some are useful" - George E. P. Box

Education

- 2017–2022 **Ph.D. in Computer Science and Engineering**,
The Hong Kong University of Science and Technology (HKUST), Kowloon, Hong Kong.
Program Advisor: Professor Kwang-Ting Tim Cheng
Research Interest: Computer Vision, 3D Perception *GPA-3.9/4.3*
- 2013–2017 **Bachelor of Engineering**,
Chu Kochen (CKC) Honors College, Zhejiang University (ZJU), Hangzhou.
Major: Information Engineering, *GPA-3.9/4.0 (91.3/100)*, *Rank-4/174 in the CKC mixed class*

Research Experience

- 2021-2022 **Coarse-to-fine Stereo 3D Object Detection**.
HKUST
- Proposed a new instance-aware multi-resolutional approach for stereo 3D object detection with enhanced performance, flexibility and transferability.
 - Proposed the first architecture for joint stereo 3D object detection and implicit shape estimation.
 - Proposed new training strategies and a patch-based refinement module to improve system performance for underrepresented non-rigid objects.
- 2020-2021 **Monocular 3D Object Detection with Intermediate Geometric Representation**.
HKUST
- Proposed a novel approach for accurate RGB-based vehicle pose estimation through learning geometry-aware representation
 - Proposed a new loss function by preserving projective invariants for improved representation learning.
- 2019-2020 **Monocular 3D Human Pose Estimation with Synthetic Supervision**.
HKUST
- Improved generalization ability of 2D-to-3D deep neural networks using synthetic data.
 - Proposed a novel evolution framework for data augmentation and a high-resolution model architecture, both contributed to achieving state-of-the-art performance.
- 2017–2019 **HKUST-Naver Collaborate Research Project on Mobile Computer Vision**, *HKUST*.
HKUST
- Developed a facial image analysis system on Windows and Android platforms consisting of face detection, landmark localization, head pose estimation and graphics rendering modules.
 - Achieved state-of-the-art accuracy on facial age estimation with only one quarter of memory usage with deep neural decision forest.
- 2016–2017 **Undergraduate Thesis: Numerical Algorithm for Physics-based Simulation**.
ZJU
- Developed a FDTD algorithm to solve coupled partial differential equations.
- 2015–2016 **Undergraduate Student Research Training Program (SRTP)**.
ZJU
- Applied transformation optics theory for energy transfer and conduct a computational simulation.

Internship

- Jan–Apr 2020 **SenseTime Autonomous Driving Group**, *Shanghai*.
Conduct 3D object detection research for autonomous visual perception.
- Jul–Aug 2016 **Zhaowei Liu Research Group**, *UCSD*, California.
Build a light-sheet microscopy system with simultaneous illumination and imaging.
Perform image processing to recover the 3D distribution of fluorescent beads.

Publications

- 2022 **Shichao Li** and Kwang-Ting Cheng. Joint stereo 3D object detection and implicit surface reconstruction, under review. [\[Link\]](#)

- 2022 **Shichao Li**, Zechun Liu, Zhiqiang Shen and Kwang-Ting Cheng. Stereo Neural Vernier Caliper, *Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI-22)* [[Github](#)]
- 2022 Xijie Huang, Zhiqiang Shen, **Shichao Li**, Zechun Liu, Xianghong Hu, Jeffry Wicaksana, Eric Xing and Kwang-Ting Cheng. SDQ: Stochastic Differentiable Quantization with Mixed Precision, *International Conference on Machine Learning (ICML)*
- 2021 **Shichao Li**, Zengqiang Yan, Hongyang Li and Kwang-Ting Cheng. Exploring intermediate representation for monocular vehicle pose estimation, *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* [[Github](#)] [[Link](#)]
- 2021 Zechun Liu, Zhiqiang Shen, **Shichao Li**, Koen Helwegen, Dong Huang and Kwang-Ting Cheng. How do Adam and training strategies help BNNs optimization, *International Conference on Machine Learning (ICML)* [[Github](#)] [[Link](#)]
- 2020 **Shichao Li**, Lei Ke, Kevin Pratama, Yu-Wing Tai, Chi-Keung Tang and Kwang-Ting Cheng. Cascaded deep monocular 3D human pose estimation with evolutionary training data, *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* [[Oral](#)] [[Github](#)] [[Link](#)]
- 2020 Lei Ke, **Shichao Li**, Yanan Sun, Yu-Wing Tai and Chi-Keung Tang. GSNet: Joint vehicle pose and shape reconstruction with geometrical and scene-aware supervision, *European Conference on Computer Vision (ECCV)* [[Github](#)] [[Link](#)]
- 2019 **Shichao Li** and Kwang-Ting Cheng. Visualizing the decision-making process in deep neural decision forest, *The IEEE Conference on Computer Vision and Pattern Recognition Workshops* [[Github](#)] [[Link](#)]
- 2019 **Shichao Li** and Kwang-Ting Cheng. Facial age estimation by deep residual decision making, Project Technical Report [[Github](#)] [[Link](#)]
- 2017 **Shichao Li**, Fei Sun, Di An and Sailing He. Increasing efficiency of a wireless energy transfer system by spatial translational transformation, *IEEE Transactions on Power Electronics* [[Link](#)]
- 2017 **Shichao Li**, Wenchao Chen, Yandong Luo, Jun Hu, Pingqi Gao, Jichun Ye, Kai Kang, Hongsheng Chen, Erping Li and Wen-Yan Yin. Fully coupled multiphysics simulation of crosstalk effect in bipolar resistive random access memory, *IEEE Transactions on Electron Devices* [[Link](#)]
- 2017 Fei Sun, **Shichao Li** and Sailing He, Translational illusion of acoustic sources by transformation acoustics, *Journal of Acoustical Society of America* [[Link](#)]

Awards

- 2021 HKUST Research Travel Grant
- 2020 *SENG* (School of Engineering) Academic Award for Continuing PhD Students
- 2017-2021 Hong Kong PhD Fellowship
- 2017 ZJU Outstanding Undergraduate Thesis Award
- 2016 Second Prize in Zhongkong Cup ZJU Robot Competition
- 2016 Honorable Mention in Mathematical Contest in Modeling (MCM)
- 2015 China National Scholarship (Top 2% in *Chu Kochen Honors College*)

Skills

Programming PYTHON, C++

Languages

Chinese Mother tongue

English TOFEL iBT 110/120, GRE Verbal 160/170