

# Shihua Huang

## Curriculum Vitae

Department of Computing  
The Hong Kong Polytechnic University  
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### Research Interests

Representation Learning  
Neural Architecture Search  
Generative Adversarial Networks

### Education

- 2014 – 2018 **Bachelor of Engineering**, Department of Computer Science and Technology, Northeastern University, China. GPA: 84/100 (3.35/4).  
Thesis: *Learning to jointly detect and segment objects with the help of local top-down modules*
- 2018 **Visiting Student**, Department of Computer Science and Engineering, Southern University of Science and Technology, China.  
Projects: *Image-to-image translation and evolutionary multi-objective optimization with GANs*
- 2021 – now **Doctor of Philosophy**, Department of Computing, Hong Kong Polytechnic University, Hong Kong.  
Supervisor: Kay Chen Tan

### Working Experiences

- 2018 – 2021 **Research Assistant**, Department of Computer Science and Engineering, Southern University of Science and Technology, China.  
Research Grants:
  - 2020-2024: *Deep Learning Based Aerofoil Design*, **Key Member**, RMB 3,200,000, Ministry of Industry and Information Technology, China
  - 2020-2022: *Evolutionary Computation Based Deep Neural Architecture Search for Microchips*, **Key Member**, RMB 1,280,000, Huawei Hisilicon, China
  - 2020-2023: *Cell-Based Deep Neural Networks Architecture Search Using Evolutionary Multiobjective Optimization*, **Key Member**, RMB 230,000, National Natural Science Foundation of China, China
  - 2020-2023: *Computationally Expensive Large-Scale Multi-Objective Optimization Driven by Generative Learning*, **Key Member**, RMB 160,000, National Natural Science Foundation of China, China

### Publications

#### Refereed Journal Articles

- TNNLS Hao Tan, Ran Cheng, **Shihua Huang**, Cheng He, Changxiao Qiu, Fan Yang, and Ping Luo. RelativeNAS: Relative Neural Architecture Search via Slow-Fast Learning. IEEE Transactions on Neural Network Learning Systems, 2021 (early access). (SCI IF=10.451)
- SWEVO Cheng He, Hao Tan, **Shihua Huang**, and Ran Cheng. Efficient Evolutionary Neural Architecture Search by Modular Inheritable Crossover. Elsevier Swarm and Evolutionary Computation, 2021 (in press). (SCI IF=7.177)
- TCYB Cheng He, **Shihua Huang**, Ran Cheng, Kay Chen Tan, and Yaochu Jin. Evolutionary Multi-Objective Optimization Driven by Generative Adversarial Networks (GANs). IEEE Transactions on Cybernetics, 2020 (in press). (SCI IF=11.079)

## Conference Proceedings

- ICCV 2021 **Shihua Huang**, Zhichao Lu, Ran Cheng, and Cheng He. FaPN: Feature-aligned Pyramid Network for Dense Image Prediction. IEEE ICCV, 2021.
- CVPRW 2020 Seungjun Nah, Sanghyun Son, Radu Timofte, Mu Kyoung Lee, **Shihua Huang**, et. al. NTIRE 2020 Challenge on Image and Video Deblurring. IEEE CVPR workshop, 2020.
- PRCV 2018 **Shihua Huang**, Lu Wang, Peiyu Yang, and Qingxu Deng. A local top-down module for object detection with multi-scale features. Chinese Conference on Pattern Recognition and Computer Vision, Guangzhou, China, 2018.

## Technical Report

**Shihua Huang** and Lu Wang. IvaNet: Learning to Jointly Detect and Segment Objects with the Help of Local Top-Down Modules, 2019. arXiv preprint, arXiv:1903.07360.

## Under Review

**Shihua Huang**, Cheng He, and Ran Cheng, Multimodal Image-to-Image Translation via a Single Generative Adversarial Network. IEEE Transactions on Artificial Intelligence, 2021.

Zhichao Lu, Ran Cheng, **Shihua Huang**, Haoming Zhang, Changxiao Qiu, and Fan Yang. Towards Real-Time Semantic Segmentation - A Surrogate-Assisted Multiobjective Approach. IEEE Transactions on Neural Network Learning Systems, 2021.

## Patents

Liangbin Xie, Guofeng Zhang, **Shihua Huang**, Lu Wang, and Qingxu Deng. A Safety Helmet Wearing Detection method Based on Deep Convolutional Neural Network. China patent, CN109034215A, filed 7/2018, issued 12/2018.

Ran Cheng, Yuli Zhang, Cheng He, **Shihua Huang**. A Method, Device, System, Terminal for Fruits Sorting. China patent, CN109740681A, filed 1/2019, issued 5/2019.

Ran Cheng, Yuli Zhang, Cheng He, **Shihua Huang**. A Method, Device, System, Terminal for Things Sorting. China patent, CN109894383A, filed 2/2019, issued 6/2019.

## Competitions

### World

MOT2016: Multiple Objects Tracking on Private Detector, **29/69**

MOT2017: Pedestrian Detection, **5/44**

IJCAI2019 workshop: IJCAI-19 Alibaba Adversarial AI Challenge on Defense, **1/2519**.

CVPR2020 workshop: NTIRE 2020 Challenge on Video Deblurring, **1/7**.

### National

5th NAVINFO Cup on AutoDriving, **1/49**, 2019; First NAIC Challenge on AI + 4K + HDR, 29/212, 2019; Data Intelligence of Chongqing Challenge on Intelligent Algorithm, **5/2990**, 2020.

## Professional Services

### Reviewer of Journals

IEEE Transactions on Multimedia

IEEE Access

Applied Soft Computing

Complex & Intelligent Systems

### Undergraduate Supervision

Xiaodian Zheng (2020), Yihui Tu (2020), Jie Lin (2019)

## Awards

Three Academic Excellence Scholarships (2015/2016/2017)

## Professional skills

Programming: Python, C/C++

OS: MacOS, Microsoft Windows, Linux

Scientific: MATLAB, PyTorch

Typography: L<sup>A</sup>T<sub>E</sub>X, Microsoft Office

## Languages

Chinese Cantonese (Native), Mandarin (Native)

English Fluent