

ZHIYUAN YOU

(+86) 132-6290-6140 | zhiyuanyou@foxmail.com | <https://zhiyuanyou.github.io>

EDUCATION

Ph.D. Candidate in Information Eng., The Chinese University of Hong Kong Aug. 2023-

- Supervisor: Professor Chao Dong & Professor Tianfan Xue

M.Eng. with Honor in Mechanical Eng., Shanghai Jiao Tong University Sept. 2020-Mar. 2023

- GPA: 3.76/4.0
- Supervisor: Professor Xinyi Le & Professor Yu Zheng

B.Eng. with Honor in Mechanical Eng., Shanghai Jiao Tong University Sept. 2016-Jun. 2020

- GPA: 3.78/4.0, Ranking: **5/148**
- Supervisor: Professor Xinyi Le
- Summer Exchange to *Columbia University* in 2018

HONORS & AWARDS

- **Excellent Master Dissertation** 2023
- **Outstanding Graduate (Postgraduate)** 2023
- **National Scholarship** 2022
- **Outstanding Graduate (Undergraduate)** 2020
- **ABB Scholarship** 2017, 2018, 2019
- **Tingya Scholarship** 2019
- **First Prize in Shanghai of CUMCM 2018** 2018

INTERNSHIP EXPERIENCE

◆ **Horizon Robotics** AI Researcher | Dec. 2022-Mar. 2023

Leader: Marvin Yu, Director of the Perception Group

Direction: Perception Algorithm in Automatic Driving

- **Task:** Improving the FCOS-based baseline to detect objects including *cars, car rears, pedestrians, & cyclists*.
- **Innovation:** (1) Changed the processing method of homologous objects (pedestrians in cyclist detection) from *ignorance* to *abandon*, which solved false positives on homologous objects. (2) developed *crop around GT & FP* strategy, using FP (high-score false positives in the previous version) to improve recall and suppress FPR. (3) verified nearly 10 data augmentation strategies, and finally chose *randomcrop + mosaic (90%) | mixup (10%) + colorjitter* as the final strategy.
- **Outcome:** Increased by ~20% in driving scenarios, **surpassing and replacing** existing mono products.

◆ **SenseTime** AI Researcher | Dec. 2020-Nov. 2022

Leader: Kai Yang, Senior AI Engineer

Direction: Anomaly Detection, Few-Shot Learning

- **Task:** Anomaly Detection. Using *only* normal samples to train a model to detect anomalies.
- **Innovation:** a) Proposed transformer-based anomaly detection models including *ADTR & UniAD*, which includes *layer-wise query decoder, neighbor masked attention & feature jittering* to suppress the “identity shortcut”. b) Successfully extended the *one-model-one-class* method to the *one-model-all-classes* method. c) Designed *push-pull loss* to be compatible with a small fraction of anomalies to increase performance.

Outcome: Academically (*MVTec-AD* & *CIFAR-10* datasets) reached **SOTA**. Validated in **6 projects**, and deployed in **2 projects** (high-speed rail quality inspection & auto parts quality inspection), becoming the key algorithm of *Shenquan Industrial Training and Inferring Platform*. **3 papers & 4 patents**.

- **Task:** Few-Shot Counting. Using *only* 1-3 examples, counting *any* class of dense objects in an image.

Innovation: a) Proposed *SAFE-Count* module, encoding similarity into features on the premise of maintaining the spatial structure, enhancing the representations of features. b) Designed *example norm* and *spatial norm* to prevent training divergence.

Outcome: Academically (*FSC-147* dataset) reached **SOTA**. **1 paper & 2 patents**.

PUBLICATIONS

- **Z. You**, Z. Li, J. Gu, Z. Yin, T. Xue, C. Dong, “Depicting Beyond Scores: Advancing Image Quality Assessment through Multi-modal Language Models,” arXiv preprint arXiv:2312.08962, 2023.
- **Z. You**, K. Yang, W. Luo, X. Lu, L. Cui, X. Le, “Few-Shot Object Counting with Similarity-Aware Feature Enhancement,” in Proc. of the IEEE Winter Conference on Applications of Computer Vision (**WACV, Oral**), 2023.
- **Z. You**, L. Cui, Y. Shen, K. Yang, X. Lu, Y. Zheng, X. Le, “A Unified Model for Multi-class Anomaly Detection,” in Proc. of the Annual Conference on Neural Information Processing Systems (**NeurIPS Spotlight**), 2022.
- **Z. You**, K. Yang, W. Luo, L. Cui, Y. Zheng, X. Le, “ADTR: Anomaly Detection Transformer with Feature Reconstruction,” in Proc. of International Conference on Neural Information Processing (**ICONIP, Oral**), 2022.
- **Z. You**, J. Li, H. Zhang, B. Yang, X. Le, “An Accurate Star Identification Approach Based on Spectral Graph Matching for Attitude Measurement of Spacecraft,” *Complex & Intelligent Systems*, 8(2), pp.1639-1652, 2022.
- L. Chen, **Z. You**, N. Zhang, J. Xi, X. Le, “UTRAD: Anomaly Detection and Localization with U-Transformer,” *Neural Networks*, 147, pp.53-62, 2022.

SERVICES

- **Journal Reviewers**
IEEE Transactions on Neural Networks and Learning Systems (T-NNLS)
IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)
Pattern Recognition (PR)
Knowledge Based Systems (KBS)
Neurocomputing
- **Conference Reviewers**
CVPR2024

MISCELLANEOUS

- **Languages** Mandarin (First Language), English (TOEFL 101)
- **Coding** Python, PyTorch, MATLAB, C++
- **Hobbies** Technical Writing, Reading, Geography, Running, Table Tennis
- **Activities** *Founder & President of SJTU Lingduzhe Association*
Leader of Media Team in SJTU International Office & SJTU Youth League Committee
Monitor of Postgraduate Class