

Chen Sun

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EDUCATION

Huazhong University of Science & Technology (HUST) *Hubei, China*
M.E. in Mechanical Engineering. **GPA:** 90.73/100 2020.09- 2023.06(expected)

Huazhong University of Science & Technology (HUST) *Hubei, China*
B.E. in Mechanical Design, Manufacture & Automation. **GPA:** 88.5/100(3.89/4.0) 2016.09- 2020.06

RESEARCH INTEREST

- *Data-Efficient Learning*: Boost performance under imperfect conditions in the wild, such as few-shot, incremental or open-set data.
- *Transfer Learning*: Alleviate model bias across different domains, such as cross-camera in autonomous driving or visual inspection
- *Robot-assisted Industrial Inspection*: Vision inspection with robots for multi-view objects with high-resolution

PUBLICATIONS & MANUSCRIPTS

Journal Articles

- [1] **C Sun**, L Gao, X Li, Y Gao. A New Knowledge Distillation Network for Incremental Few-Shot Defect Detection. *IEEE Transactions on Neural Networks and Learning Systems* (**IEEE TNNLS**) Under Review [[arXiv](#)][[Github](#)]
- [2] S Ke, **C Sun**, L Gao, X Li Open-Set Fault Diagnosis based on Prototype Learning with Dual Category-Classifiers. *IEEE Transactions on Industrial Informatics* (**IEEE TII**) Under Review

Conference Papers

- [1] **C Sun**, Q Wan, Z Li, L Gao, X Li, Y Gao. Anchor-based Detection and Height Estimation Framework for Particle Defects on Cathodic Copper Plate Surface. *2022 IEEE 18th International Conference on Automation Science and Engineering* (**IEEE CASE 2022**)[[Paper](#)] [[Github](#)] [[Slide](#)]
- [2] C. Liu, Y. Cao, **C. Sun**, W. Shen, X. Li, L. Gao. An Outlier-Aware Method for UWB Indoor Positioning in Non-line-of-sight Situations. *2022 IEEE 25th International Conference on Computer Supported Cooperative Work in Design* (**IEEE CSCWD 2022**).[[Paper](#)]

RESEARCH EXPERIENCE

The State Key Laboratory of Digital Manufacturing Equipment and Technology@HUST *Hubei, China*
Advisor: [Professor Xinyu Li](#) and [Professor Liang Gao](#)

- **Adversarial Mean-Teacher for Cross-camera Object Detection** *2022.06-present*
 - Domain shifts are main problems in cross-domain detection, especially scale and style mis-alignment.
 - A Class-wise, adaptive strategy is designed for threshold for pseudo label generation in self-learning
 - Multi-scale adversarial learning with consistent loss is designed at the stage of RPN for high quality proposals
 - Experiments on PCB Inspection and autonomous driving data (Cityscape2Kitti) prove the effectiveness of method
- **Incremental Few-shot Object Detection for Industrial Inspection** *2022.01-2022.05*
 - For incremental few-shot data, deep learning models may face catastrophic forgetting and misclassification problems.

- A knowledge distillation framework is designed for fine-tuning, to balance between knowledge retention and exploration
- A novel Incremental RCNN network is proposed to decouple feature representation and alleviate unstable data quality.
- Proposed method gets state-of-the-art performance under several few-shot scenes on public industrial inspection dataset.

➤ **Multi-task visual learning for high resolution images**

2021.10-2022.12

- Particles on cathodic copper plate surfaces are recorded with their labels, locations and heights using high resolution camera.
- A Height-RCNN with extra label assign network is used to conduct end-to-end detection and height estimation
- An image blocking operation, based on the sparse distribution of objects, is utilized to crop raw images into several blocks

SELECTED HONORS

➤ **Scholarships & Awards**

- Xiaomi Scholarship (Highest scholarship in HUST sponsored by Xiaomi Corp) 2022.10
- First-class Scholarship for Postgraduates of HUST 2020.09 & 2021.09 & 2022.09
- Student Award for Research and Innovation of HUST 2022.01
- Merit Postgraduate student of HUST 2021.09
- Excellent Graduates of HUST 2019.06

➤ **Competitions**

- **First Prize Oral Presentation Winner & Outstanding Poster Award Winner** of IEEE CASE Student Event 2022.08
- **Mathematical Modeling Stars Nomination** (Top2) of China Post-graduate Mathematical Modeling Contest 2022.05
- **The third prize (8/264)** of AI Innovation & Application Competition 2021.12

PROFESSIONAL SKILLS

➤ **Programming**

- **Proficient:** Python, PyTorch, Markdown, LaTeX, Git
- **Familiar:** Linux, C/C++, TensorFlow, Keras, MATLAB etc.

➤ **Language**

- **TOEFL iBT:** 109/120 (Reading 30, Listening 29, Speaking 22, Writing 28)
- **GRE:** 329/340+3.5/6.0 (Verbal 160, Quantitative 169, Analytical Writing 3.5)

ACADEMIC SERVICE

- **Reviewer:** Expert System with Application
- **Conference Volunteer:** [BAAI Conference](#) (2020-2022, Excellent Editor)