Chen Sun

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EDUCATION

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

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

RESEARCH INTEREST

➤ ***Data-Efficient & Transfer Learning***: Boost performance under imperfect conditions in the wild, such as few-shot, incremental or cross-domain data, especially in autonomous driving and visual inspection area.

➤ ***Robotized Intelligent Manufacturing***: Combine Robot-arm with Deep learning to explore fast and accurate quality inspection for large-scale multi-view objects

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-Classifier. *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

Data Efficient and Transfer Learning Under Imperfect condition

➤ **Multi-scale Adversarial Mean-Teacher for Cross-camera Object Detection**   *2022.06-present*

- Analyzed the imbalance problem in pseudo labels and foreground-background caused by mean-teacher framework for cross-domain detection.

- Proposed Multi-scale Adversarial Mean Teacher(MAMT) to capture domain-invariant high quality proposals feature representation in multi-scale and learn with a class-wise, adaptive pseudo label generation strategy

- Evaluated the proposed MAMT on cross-domain PCB Inspection and autonomous driving data dataset and prove the effectiveness of method.

➤ **Knowledge Distillation Network for Incremental Few-Shot Defect Detection**   *2022.01-2022.05*

- Analyzed the catastrophic forgetting and misclassification problems in incremental few-shot data caused by generalization abilities of neural networks.

- Proposed Dual Knowledge Align Network(DKAN) to alleviate the catastrophic forgetting problem, which

designs a knowledge distillation framework to align the feature and logit distribution and balance between knowledge retention and exploration in the fine-tuning stage.

- Evaluated the proposed DKAN on Few-shot NEU dataset and proved that the DKAN achieved state-of-the-art performance on both base and novel data.

Robotic-based Multi-View Anomaly Detection for Tesla Automotive Parts

➢ **Multi-task Visual Learning for Small Particle Defects in Large-scale Images** *2021.10-2021.12*

- Collected data from particles on cathodic copper plate surfaces with their labels, locations and heights using high resolution 2D camera.

- Proposed Anchor-based Detection and Height Estimation (ADHE) framework, which uses image blocking operation, based on the sparse distribution of objects, crop raw images into several blocks and Height-RCNN with extra label assign network to conduct end-to-end detection and height estimation

- Evaluated the proposed ADHE on data collected on real-world industry and achieved Millimeter-level precision on height estimation

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 (Awarded to postgraduate students with excellent research potential, 0.2%) 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, IEEE Robotics and Automation Society 2022.08

- **Mathematical Modeling Stars Nomination** (Top2) of China Post-graduate Mathematical Modeling Contest, Ministry Of Education of China 2022.05

- **The third prize (8/264)** of AI Innovation & Application Competition, China Academy of information and communications technology 2021.12

PROFESSIONAL SKILLS

➢ **Programming**: Python, PyTorch, Markdown, LaTeX, Git, Linux,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)