Huanrong LIU

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EDUCATION

China University of Geosciences(CUG) *Sept. 2019 - Jun. 2023*

- **Major:** *Communication Engineering* **GPA:** *83/100*
- **Minor:** *Economics* **GPA:** *88/100*
- **Relevant Courses:** *Computer Vision, Pattern Recognition, Neural Network and Deep Learning, Digital Image Processing, Artificial Intelligence Application*

RESEARCH EXPERIENCE

National Innovation and Entrepreneurship Training Program ***Project Leader***

Project: *'YOLOv5-based Domain Adaptive Object Detection'* *May. 2022 - Jun. 2023*

- *Designed knowledge distillation framework for cross domain object detection.*
- *Conduct cross-domain tasks without re-labeling new datasets.*
- *This method greatly reduces the negative effects of domain drift.*
- *The model performed well on two benchmark datasets: Pascal VOC to Clipart1k, Cityscapes to Foggy Cityscapes.*

Hubei Innovation and Entrepreneurship Training Program ***Project Leader***

Project: *'Radar Array Resource Allocation Method'* *May. 2021 - Jun. 2022*

- *Proposed an efficient radar array resource allocation method.*
- *This method can address the requirements of multitasking scenarios.*
- *This method can reconfigure the array resources for new events.*

Teaching Laboratory Open Funding ***Project Leader***

Project: *'Semantic Segmentation of Remote Sensing Images'* *Nov. 2022 - Mar. 2023*

- *Designed three transfer learning methods for semantic segmentation of remote sensing images: adversarial, class center alignment and cycle consistency.*
- *The proposed method can be used to identify remote sensing images with altered features.*
- *All three methods achieved good results in a transfer task consisting of three datasets from Pavia University, University of Houston, and Washington DC Mall.*
- *Developed software(beta) that integrates transfer learning methods.*

Transversal Project of Prof. Dapeng Luo ***Project Participant***

Project: *'Video Counting System for Construction Materials'* *Sept. 2021 - Nov. 2021*

- *Designed a video counting system(YOLOv5+DeepSORT) to help workers count construction materials on the worksite.*
- *Video counting systems can reach frame rates of 30 to 60 FPS and meet the requirements of operation.*
- *Increase model robustness to complex environments through data augmentation.*

Transversal Project of Prof. Guocheng Hao ***Project Participant***

Project: *'Radar Pulse Signal Recognition'* *Jun. 2021 - Jul. 2021*

- *Using BP neural networks to classify six types of radar signals.*
- *The classification accuracy rate reached 98.7%.*

Transversal Project of Prof. Liang Zhong ***Project Participant***

Project: *'Object Detection on Embedded Device'* *Jan. 2022 - Feb. 2022*

- *Deployed tiny neural network models on NVIDIA Jetson Nano for real-time object detection tasks.*

AWARDS & HONORS & CERTIFICATES

- *National University Student Innovation and Entrepreneurship Training Program* — *5,000RMB Funding*
- *Hubei University Student Innovation and Entrepreneurship Training Program* — *5,000RMB Funding*
- *The 15th Siemens Cup China Intelligent Manufacturing Challenge* — *Provincial Third Prize*
- *The 6th National Student Integrated Circuit Innovation and Entrepreneurship Competition* — *Provincial Third Prize*
- *CUG Teaching Laboratory Open Funding* — *1,500RMB Funding*
- *CUG Internet+ University Student Innovation and Entrepreneurship Competition* — *Second Prize*
- *CUG Challenge Cup University Student Entrepreneurial Project Competition* — *Second Prize*
- *CUG Science and Technology Paper Presentation* — *Second Prize*
- *Telecom Cup Electronic Design Competition* — *Second Prize*
- *School of Mechanical and Electronic Information Science and Technology Paper Presentation* — *First Prize*
- *The Hong Kong University of Science and Technology (Guangzhou) 2023 Red Bird Offline Challenge Camp*
- *Certificate of Computer Software Copyright Registration*

UNDERGRADUATE THESIS

Domain Adaptive Object Detection based on Knowledge Distillation

- *Using Teacher-Student model to learn target domain features and reduce degradation due to domain shift.*
- *Using the advanced YOLOv5 to replace the out-dated Fater-RCNN in previous work.*
- *Using consistency loss to reduce the source and target domain gap to enable models to learn common features.*
- *In Benchmark: CityScapes->FoggyCityScapes reached MAP: 56.1%.*

LANGUAGES & SKILLS

Languages: *Mandarin, Cantonese, IELTS - 6, CET4 - 515, CET6 - 460.*

Computer Tools: *Microsoft Office, Python, C, C++, MATLAB, Linux, PyTorch.*