Longfei Yan

longfeiyan@hust.edu.cn (+86) 15273179548 dragonfly606.github.io

EDUCATION

Huazhong University of Science and Technology **Wuhan, CHN**
M.E. in Artificial Intelligence *Sep. 2022 - Jun. 2025 (expected)*

– GPA: 91.31/100
– Advisor: Prof. Yihua Tan

Central South University **Changsha, CHN**
B.E. in Automation *Sep. 2018 - Jun. 2022*

– GPA: 91.66/100
– Rank: 9/253 (3.5%)
– Courses: Advanced Mathematics II (100), Probability And Statistics (95), Object-Oriented Programming (95), Artificial Intelligence (95), Linear Algebra (93)

PUBLICATIONS

- **Longfei Yan**, Pei Yan, Shengzhou Xiong, Xuanyu Xiang, Yihua Tan. MonoCD: Monocular 3D Object Detection with Complementary Depths. **CVPR**, 2024. (Accepted)
  Code: https://github.com/elvintanhust/MonoCD
- Xuanyu Xiang, Yihua Tan, **Longfei Yan**. Cloud-Guided Fusion with SAR-to-Optical Translation for Thick Cloud Removal. **IEEE Transactions on Geoscience and Remote Sensing**, 2023. (Accepted)

AWARDS & HONORS

- **First-class Scholarship for Postgraduates**, HUST *2022*
- **Third Prize of Roadside 3D Algorithm Track** in International Algorithm Case Competition (40,000 RMB) *2022*
- **Outstanding Graduates**, CSU *2022*
- **First Class of School Scholarship(5%)**, CSU *2019&2020&2021*
- **Excellent Student(10%)**, CSU *2019&2020&2021*
- **Best Creative Project Award (Top-20 in China)** in National Conference on Undergraduate Innovation and Entrepreneurship *2021*
- **My Favorite Project Award (Top-20 in China)** in National Conference on Undergraduate Innovation and Entrepreneurship *2021*
- **Meritorious Winner** in American Mathematics Modelling Contest for College Students (ICM) *2020*
- **Ruiwei Scholarship**, CSU *2019*

RESEARCH INTEREST

3D Computer Vision, Autonomous Driving, Multi-modal Learning

RESEARCH EXPERIENCE

Monocular 3D Object Detection *Mar. 2023 - Now*

- Observed the multi-depth coupling phenomenon in existing monocular 3D object detectors and analyzed how complementary depth resolves it by mathematical derivation.
- Proposed to add a new depth prediction branch with the global clue and achieve complementarity in form through geometric relations to improve depths complementarity.
- Designed structure outperformed the SOTA model on KITTI and Nuscenes datasets and validated the effectiveness of complementary depths on multiple detectors. Paper was submitted to CVPR2024 and accepted.

INTERNSHIP

Alibaba Sports, Hangzhou, China *Mar. 2024 - Now*

Research Intern

- Research on Spatio-Temporal Action Detection in Sports Scenes.
- Proposed to introduce the ball motion trajectory extraction to assist action detection and introduce a new task for video highlight object detection.

ACADEMIC PROJECTS

Electrical Terminal Block Content Recognition and Logic Tree Generation *Nov. 2023 - May 2024*

Participator

- Designed a set of terminal block content recognition and logic tree generation algorithms and software, the function includes terminal block optical character recognition and logic generation.
- Proposed to use OCR detection information such as size and location as feature attributes and then perform multilevel unsupervised clustering to form logical chains.

Intelligent Tower Crane Visual Warning System *Feb. 2023 - Aug. 2023*

Project Leader

- Designed a set of intelligent tower crane operation warning algorithms and software to realize the prediction and warning of the dangerous area below the crane operation to protect the construction safety of workers. Algorithm functions include worker detection, adaptive dangerous area range judgment based on the height of hanging objects, and alarm based on dangerous event detection.
- Proposed to add a depth prediction head to the existing yolov5 model to predict the height of the hanging objects. Proposed to use the dynamic frame difference method to judge whether the hook is in a dangerous state of hanging objects.
- Designed algorithm achieved over 95% alarm success rate.

International Algorithm Case Competition - Roadside 3D Algorithm *Aug. 2022 - Dec. 2022*

Team Leader

- Compared with traditional autonomous driving 3D detection tasks, the difficulty of roadside monocular 3D detection lies in the fact that cameras at different intersections have different configurations and the assumption that the optical axis is parallel to the ground is no longer valid.
- Proposed the use of normalized depth to solve the ambiguity of depth prediction caused by different camera parameters and the introduction of intersection ground plane equation information to alleviate the depth ill-posed problem.
- Designed model ranked 7th out of 100+ registered teams and collected the third prize.

National Undergraduate Innovation and Entrepreneurship Project *Apr. 2020 - Dec. 2021*

Project Leader

- Designed a smart and safe cycling helmet based on Internet of Things and positioning technology, and developed corresponding software and hardware platforms.
- Proposed two novel designs: the smart helmet reminder-wearing function and real-time collision detection and localization to cooperate with the doctor-police joint treatment function. Obtained patent authorization
- Be selected(4/1803) by CSU to attend National Conference on Undergraduate Innovation and Entrepreneurship. Received Best Creative Project Award (Top-20) and My favorite project Award (Top-20) at the conference.

SKILLS

Programming	Python, Pytorch, Matlab, LaTex, C, C++
Development	Flask, MySQL, Git, Linux
Languages	CET-4: 556, CET-6: 479, Mandarin (mother tongue)