Tianhai Wang (王 天海)

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About Me

I am currently a M.Phil. student at College of Information and Electrical Engineering, China Agricultural University, where I work on intelligent navigation for agricultural machinery.

Research interest: object detection and tracking, few/zero-shot learning, open set recognition, LiDAR-camera fusion, point cloud processing, simultaneous localization and mapping (SLAM), and related applications such as autonomous vehicles, field robotics, and smart agriculture.

Education Experience

China Agricultural University (985 Project)

Master of Philosophy in Agricultural Electrification and Automation 09/2021-06/2024

- GPA: 3.6/4.0 (88.27/100), Ranking: 1/22
- Supervisor: Prof. Man Zhang, Han Li
- Main research direction: Intelligent navigation for agricultural machinery

Guangxi University (211 Project)

Bachelor of Engineering in Mechanical and Electronic Engineering 09/2017-06/2021

- GPA: 3.32/5.0 (83.24/100)
- Major Courses: Control Engineering, Electrician and Electronics, Mechanical Principle and Design, etc.

Project Experience

Research and development of common key technology and system for corn unmanned operation (National Key Research and Development Program of China, Grant No. 2022YFD2001601, 2022-2026)

- Mainly responsible for the research on obstacle detection and path planning algorithms, achieving the application of zero/few-shot learning and multi-sensor fusion in unmanned agricultural machinery.

Research and development of cloud management and control platform for rice unmanned operation (National Key Research and Development Program of China, Grant No. 2021YFD2000604, 2022-2026)

- Mainly responsible for the research on multi-agent collaboration algorithms, achieving the dynamic collaboration in the harvesting-unloading-transportation process.

Publications

First author:

- **T. Wang**, N. Wang, J. Xiao, Y. Miao, Y. Sun, H. Li, M. Zhang*. One-shot domain adaptive real-time 3D obstacle detection in farmland based on semantic-geometry-intensity fusion strategy. *Computers and Electronics in Agriculture*. 2023. (SCI, JCR Q1, **IF=8.3**)
- **T. Wang**, B. Chen, N. Wang, Y. Ji, H. Li, M. Zhang*. Zero-shot obstacle detection using panoramic vision in farmland. *Journal of Field Robotics*. 2023. (SCI, JCR Q1, **IF=8.3**)
- **T. Wang**, B. Chen, Z. Zhang, H. Li, M. Zhang*. Applications of machine vision in agricultural robot navigation: A review. *Computers and Electronics in Agriculture*. 2022. (SCI, JCR Q1, **IF=8.3**)

- **T. Wang**, Y. Liu, M. Wang, Q. Fan, H. Tian, X. Qiao*, Y. Li*. Applications of UAS in crop biomass monitoring: a review. *Frontiers in Plant Science*. 2021. (SCI, JCR Q1, **IF=5.6**)

Co-author:

- N. Wang, X. Yang, **T. Wang**, J. Xiao, M. Zhang, H. Wang, H. Li*. Collaborative path planning and task allocation for multiple agricultural. *Computers and Electronics in Agriculture*. 2023. (SCI, JCR Q1, **IF=8.3**)
- N. Wang, Y. Han, Y. Wang, **T. Wang**, M. Zhang, H. Li*. Research Progress of Agricultural Robot Full Coverage Operation Planning. *Transactions of the Chinese Society of Agricultural Machinery*. 2022. (**EI**)
- H. Tian, **T. Wang**, Y. Liu, X. Qiao*, Y. Li*. Computer vision technology in agricultural automation—A review. *Information Processing in Agriculture*. 2020. (**EI, Cited by 370+**)

Honours and Awards

Honours:

- 10/2023, **National Scholarship of China** (The highest level scholarship awarded by the Chinese government, grant ratio=0.2%)
- 06/2023, Honorary title of "Outstanding Postgraduate Teaching Assistant" of China Agricultural University
- 10/2022, First Class Scholarship for Postgraduate of China Agricultural University
- 06/2021, Honorary title of "Outstanding Graduate" of Guangxi University
- 05/2021, Outstanding Bachelor Thesis of Guangxi University
- 12/2020, National Encouragement Scholarship of China
- 09/2020, Outstanding Assessment of National Innovation Program for Undergraduate (Leader)
- 12/2019, Honorary title of "Outstanding Undergraduate" of Guangxi University
- 12/2019, National Encouragement Scholarship of China

Awards:

- 04/2020, Guangxi College Students Innovation Design and Production Competition, 3rd Prize
- 12/2019, National College Students Intelligent Agricultural Equipment Innovation Competition, 2nd Prize
- 11/2019, China College Students 'Internet+' Innovation and Entrepreneurship Competition in Guangxi Division, Bronze Medal
- 10/2019, National 3D Innovative Design Annual Competition in Guangxi Division, 2nd Prize
- 07/2019, National 3D Innovative Design Elite Competition in Guangxi Division, 2nd Prize
- 07/2019, National University Students Electrical Math Modeling Competition, 3rd Prize
- 06/2019, China University Robot Competition ROBOCON, 3rd Prize
- 06/2018, National College Students Mechanical Innovation Design Competition in Guangxi Division, 3rd Prize

Skills

- **Programming:** Python, Matlab/Simulink, C/C++
- **Framework:** PyTorch, Robot Operating System (ROS)
- **Language:** Chinese, English (Preparing for IELTS)

Service

- Student Member, Chinese Society of Agricultural Engineering
- Teaching Assistant, Fall 2022&2023 Intelligent Navigation Technology Course