Wenhao Ding

Ph.D. Student at Carnegie Mellon University

✆ (+1) 4126166807
✉ wenhaod@andrew.cmu.edu
🕮 www.wenhao.pub
⊚ https://github.com/GilgameshD
in wenhaoding

Education

2019 – 2024	**Ph.D. Mechanical Engineering**, *Carnegie Mellon University*, Pittsburgh, the U.S..
2014 – 2018	**B.Eng. Electronic Engineering**, *Tsinghua University*, Beijing, China.
Honors:	Tsinghua University Outstanding Graduate Thesis Award
	34th Tsinghua University Academic Challenge Cup (*Second prize*)
	35th Tsinghua University Academic Challenge Cup (*Third prize*)
	10th Tsinghua University Science and Technology Innovation Training Program "Spark"
	Tsinghua University Technology Innovation Excellence Award (*2016, 2017*)

Publications

2019.11   **Adaptive Multi-scale Detection of Acoustic Events**,
Wenhao Ding and Liang He,
IEEE/ACM Transactions on Audio, Speech, and Language Processing (T-ASLP).

2019.9   **CMTS: Conditional Multiple Trajectory Synthesizer for Generating Safety-critical Driving Scenarios**,
Wenhao Ding, Mengdi Xu and Ding Zhao,
Submitted to ICRA 2020.

2019.5   **Prior Knowledge-based Regularization for Sound Event Localization and Detection**,
Wenhao Ding*, Jingyang Zhang* and Liang He,
Detection and Classification of Acoustic Scenes and Events Challenge 2019 (Task 3).

2019.2   **Multi-Scale Time-Frequency Attention for Acoustic Event Detection**,
Jingyang Zhang, Wenhao Ding, Jintao Kang and Liang He,
Interspeech 2019, Graz, Austria.

2018.7   **A New Multi-vehicle Trajectory Generator to Simulate Vehicle-to-Vehicle Encounters**,
Wenhao Ding, Wenshuo Wang and Ding Zhao,
IEEE International Conference on Robotics and Automation (ICRA) 2019, Montreal, Canada.

2018.1   **MTGAN: Speaker Verification through Multitasking Triplet Generative Adversarial Networks**,
Wenhao Ding and Liang He,
Interspeech 2018, Hyderabad, India..

2018.4   **Hierarchical Reinforcement Learning Framework towards Multi-agent Navigation**,
Wenhao Ding, Shuaijun Li and Huihuan Qian,
IEEE International Conference on Robotics and Biomimetics (ROBIO) 2018, Malaysia.

2017.6   **Vehicle Pose and Shape Estimation through Multiple Monocular Vision**,
Wenhao Ding, Shuaijun Li, Guilin Zhang, Xiangyu Lei and Huihuan Qian,
IEEE International Conference on Robotics and Biomimetics (ROBIO) 2018, Malaysia.

Projects

2017.5   **Automatic Registration of Point Cloud through Small-overlap Cameras**.
Camera extrinsic Parameter calibration is important for 3D reconstruction. Beyond traditional methods like chessboard, we are developing an automatic method for real-time applications. We propose to use an end-to-end CNN for this task.

2016.10   **Research on Bluetooth Base Station Location Scheme**.
This project aims at locating the devices using the Received Signal Strength Indication (RSSI) of Bluetooth. The transmitting devices are arranged in an array and are connected with Controller Area Network (CAN) bus. I was responsible for designing the circuit board of transmitting and receiving devices. The whole network requires more than 100 pieces of circuit board, so the stability and robustness is an important factor to be considered.

2016.5   **Collaborative Distributed Formation Robot System**.
We developed a collaborative distributed system with UWB (Ultra Wideband) communication and a self-made mobile robot platform. With the high positioning accuracy of UWB system (about 10cm), robots can know where they are and the distance with other robots. After receiving specific commands, these robots can move to their positions and form a predefined formation automatically.

2016.1   **Air Hockey Robot with Moving Object Tracking**.
We built a robot that can play air-hockey game with human. The architecture of this robot consists a suspension camera (capturing the moving ball) and an executive arm (a striking device with two degrees of freedom). Due to its excellent ability of prediction and speed, it can beat most human players. I did most work of this project and it received 34th Academic Challenge Cup second prize.

Activities

2018.11   **Tsinghua University, Beijing, China**,
Research Engineer.
I worked on the topic of acoustic event detection, especially abnormal sound detection in factories and railways.

2018.7   **Carnegie Mellon University, Pittsburgh, the U.S.**,
Research Intern.
I worked on the project of vehicle encounter scenarios generation.

2018.1   **HongKong University of Science and Technology, HongKong, China**,
Research Intern.
I worked on the memory-based reinforcement learning methods for robots navigation.

2017.7   **Chinese University of HongKong, HongKong, China**,
Research Intern.
I worked on robot localization in the Robotics and Artificial Intelligence Laboratory.

2017.2   **Owlii (`http://www.owlii.com/`), Beijing, China**,
Internship.
As an intern, I worked on multiple camera auto-calibration and parallel depth estimation of stereo camera.

2016.5   **Spark, Tsinghua University, Beijing, China**,
Member.
This program annually selects about 40 students from sophomore undergraduate students. These selected students form a class to conduct overseas research and hold academic discussions.

Technical ability

English: TOEFL: 108(S: 25), GRE: 151(V)+168(Q)+3.0
Languages: C/C++, Python, Matlab, Verilog, HTML/CSS
Technologies: ROS, CARLA, Pytorch, Qt, Altium Designer, STM32