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GilgameshD

Wenhao Ding

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*)
Undergraduate Academic Recommendation Program Fund (2016)
10th Tsinghua University Science and Technology Innovation Training Program "Spark"
Tsinghua University Technology Innovation Excellence Award (*2016, 2017*)

Publications

2019.5 **Prior Knowledge-based Regularization for Sound Event Localization and Detection**,
Jingyang Zhang, Wenhao Ding* 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 work on the topic of acoustic event detection. Specific application scenarios are abnormal sound detection in factories or railways.

2018.7 **Carnegie Mellon University, Pittsburgh, the U.S.**,

Research Intern.

I mainly worked on the project of generation of vehicle encounter scene, supervised by Prof. Ding Zhao.

2018.1 **HongKong University of Science and Technology, HongKong, China**,

Research Intern.

For the task of robot navigation, I utilized Hindsight Experience Replay (HER) method to improve the result of reinforcement learning.

2017.7 **Chinese University of HongKong, HongKong, China**,

Research Intern.

I spent about two months in CUHK doing research about robotics localization. The laboratory which I visited is called Robotics and Artificial Intelligence Laboratory, whose leader is Prof. Yangsheng Xu.

2017.2 **Owlii (`http://www.owlii.com/`), Beijing, China**,

Internship.

Owlii is a startup company which develops 3D reconstruction and real-time compressed video transmission technology for VR/AR application. I am an intern here doing some works about multiple camera auto-calibration and parallel depth estimation of stereo camera.

2016.5 **Spark, Tsinghua University, Beijing, China**,

Member.

This program selects about 40 students from sophomore undergraduate students every year. These selected students form a class to conduct overseas research and hold academic discussions. In 2016 summer vacation, we went to the British to investigate the technology and culture of British.

2015.12 **Skyworks, Tsinghua University, Beijing, China**,

One of team leaders.

"Skyworks" is the largest student association about technology innovation in Tsinghua university and it consists three teams. I am the team leader of *Future Vision*. We make projects about computer vision, deep learning and robotic navigation.

Technical ability

English: TOEFL: 108(S: 25), GRE: 151(V)+168(Q)+3.0

Languages: C/C++, Python, Matlab, Verilog, HTML/CSS

Technologies: ROS, Tensorflow, Pytorch, OpenCV, Point Cloud Library(PCL), Qt, Altium Designer, STM32, Arduino