HAIMING GANG

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EDUCATION

NEW YORK UNIVERSITY, New York, NY
Master of Science in Mechatronics and Robotics Sep/2015-May/2017
GPA 3.76/4.0

SHANGHAI UNIVERSITY, Shanghai, China
Bachelor of Science in Mechanical Engineering and Automation Sep/2011-Jun/2015
GPA 3.52/4.0 **Ranking** 12/337

WORK EXPERIENCE

Research Engineer (Honda Research Institute USA, Inc) Sep/2017-present

- Lead vehicle sensor setup, synchronization, integration, calibration and utilization of information from various data streams (e.g., cameras, Lidar, GPS/IMU, CAN bus data, Eye tracker)
- Work on large scale 2D/3D data acquisition, processing, association, and annotation for **ADAS**, **autonomous driving** and **indoor robotics** applications (creator and main maintainer of public 3D lidar dataset H3D)
- Build a python-based library includes state-of-the-art **3D object detection and tracking** algorithms (Multi DNN models and non-learning-based methods) as internal tool
- Develop **3D scene understanding** pipeline which involves in object detection/tracking, multi-sensor fusion, lidar SLAM, action/behavior analysis and traffic participants modeling via graph neural network
- Hands-on experience with machine learning frameworks such as Pytorch/Tensorflow, computer vision libraries such as OpenCV/PCL and robotics middleware such as ROS (Robot Operation System)

PROJECTS

Autonomous Domestic Assistant Robot, *Research, Development, Design, Implementation, and Evaluation* Jan/2017-May/2017

- Designed a robot system that delivers various objects automatically based on the requests of user (via integrated Computer Vision and ROS in an iOS application)
- Integrated SLAM for automatic navigation using gmapping and amcl packages
- Used OpenCV to recognize and obtain position information for interested objects

Arm Robot Project, *Research, Development, Design, Implementation, and Evaluation* Jul/2016-Dec/2016

- Designed and constructed a robot manipulator and controlled it using the ROS platform combined with RaspberryPi
- Collected images from a fixed camera to recognize five objects using Haar cascade classifiers
- Obtained position information by perspective SURF feature detect
- Integrated object recognition and position detection which was published into an iOS Application

Tot Bot, *Designer* Oct/2016-Dec/2016

- Wrote an iOS application includes image acquisition and processing and visual interface for infants to navigate robot via tablet and the camera of tablet
- Published topic to control Pioneer 3dx robot through ROS platform installed on RaspberryPi

Indoor Mobile Robot, *Designer* Jan/2015-Jun/2015

- Developed the object tracking algorithm using OpenCV
- Combined the Xtion, Sonar, robot's body with Camshift algorithm written in C/C++
- Debugged robot and used robot to finish indoor navigation tasks

PUBLICATION

R. Tian, **H. Gang**, and D. Isele "Curious Autonomous Robots in Uncertain Environments" (Under Review)
A. Patil, S. Malla, **H. Gang**, and Y.-T. Chen, "The H3D Dataset for Full-Surround 3D Multi-Object Detection and Tracking in Crowded Urban Scenes," IEEE Conference on Robotics and Automation (ICRA), 2019.

COMPUTER SKILLS

Programming: C/C++, Python, Object C++, Pytorch, TensorFlow, OpenCV, ROS, PCL, Linux
Design/Simulation: Pro Engineer, Auto CAD, SolidWorks, MATLAB, Simulink, RobotStudio
Microcontroller: Raspberry Pi, BS2, Arduino, Jetson TX2, Jetson Nano