Weiyuan Deng

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Portfolio: https://weiyuandeng.github.io/

Education

MS, Robotics, *Northwestern University*, GPA: 3.46/4.00. 2016 – 2017

BS, Mechanical Engineering, *Purdue University*, GPA: 3.46/4.00. 2014 – 2016

- Scholarship: Purdue School of Engineering and Technology - SYSU: Impact Scholarship

BS, Theoretical and Applied Mechanics, *Sun Yat-Sen University*, GPA: 3.40/4.00. 2012 – 2016

Professional Experience

Work

Algorithm Engineer, *YOUIBOT Robotics Technology Company* 2019 – present

- Developed a method for AGV to dock with goods rack by only classify three legs without extra feature
- Improved registration accuracy of docking module based on a single reflector feature (applying for patent)
- Improved the deceleration performance of AGV with a smooth velocity S-curve
- Controlled AGV to follow the planned path using Pure Pursuit Control method
- Designed a mapping and localization system with multiple reflectors based on point cloud registration
- Optimized and reconstructed localization module based on Iterative Closest Point (ICP) algorithm
- Implemented and tested the LOAM SLAM system and the HDL SLAM system

Software Engineer, *ZHONGWEI Technology Company* 2017 – 2018

- Implemented and developed a registration system based on Kernel Correlation algorithm
- Improved grid map data processing module for localization system with K-Nearest Neighbour
- Implemented and tested the TEASER++ SLAM system with Truncated Least Squares Method
- Implemented and developed a localization system based on Adaptive Monte Carlo Localization algorithm
- Programmed and controlled UAV for aerial survey

Engineer Intern, *JINGTONG Space Technology Company* 2016

- Topographic map reconstruction of urban area with AutoCAD

Assistant, *Key Laboratory of Optoelectronic Material and Technology of China* 2012

Research

Magnetic Tracking System for Burrowing Robot, *Northwestern University* 2017

- Developed a magnetic tracking system used least square method with Arduino and two magnetometers

Song Classification and Robot Dance, *Northwestern University* 2017

- Implemented song classifier Dejavu based on Fast Fourier Transform
- Planned motion (capture with Kinect Skeleton Tracking) for humanoid URDF according to songs

Power Density Maximization of Lithium Ion Battery, *Purdue University* 2015 – 2016

- Found maximum power density of LIB with Finite Element Analysis
- Found heterogeneous grain structure of LIB with data analysis and
- Recreated grain structure that maximize its power density with MATLAB

Analysis of Force Transfer and Arching Effect of Particles Assemblies, *Sun Yat-sen University* 2014

- Created 3D model for a sand pile and a silo ensiled with sand using PFC3D
- Analyzed force transmission between particles by means of Discrete Element Method
- Compared and analyzed the arching effect of the two models

Projects

Autonomous Path-Following Car Controlled by Android Phone, *Northwestern University* 2017

- Designed and built a differential drive robot car using 3D printer and laser cutter
- Developed an image processing Android app for detecting the road with a phone camera
- Controlled motor with PIC microcontroller using custom PCB board
- Used an Android phone to communicate with robot car over USB CDC protocol

Machine Learning Projects, *Northwestern University* 2017

- Classified plying cards in real time with OpenCV and Convolutional Neural Net in TensorFlow
- Classified five different instruments with Mel-Frequency Cepstral Coefficients and SVM

Robot Shuffle Control Based on Corner Detection, *Northwestern University* 2016

- Used Harris corner detection to classify 3 cubes (replaced cups in traditional shell game)
- Baxter played a simplified classic shell game with ROS using inverse kinematics

Machine Design, *Purdue University* 2015 – 2016

- Designed a high capacity ball feeder and a plastic-recycling crusher with Creo and analyzed loading to varies structures with ANSYS
- Designed a medical vending machine with Creo and programming for drug delivery

Metalworking Training, *Guangdong University of Technology* 2014

Skills

- Proficient: C/ C++, Python, Linux OS, ROS, CMake, PCL, GitHub, OpenCV, Gazebo, Rviz
- Experienced: Tensorflow, Pytorch, MATLAB, Mathematica, ANSYS, Creo, Docker, OpenCV
- Knowledgeable: Machine Learning, Computer Vision/Perception, Finite Element Analysis, Manipulation

Other

- Proficient in Chinese Mandarin, Cantonese and English; intermediate in Japanese
- Hostess, *AliGame Comic-Con*, 2018
- Volunteer, *Indiana State Museum, 2015*
- Volunteer Teaching Assistant, *Xing'er School of Deaf Children*, 2012
- Level 6 Certificate of Piano**,** Grade 8 Certificate of Taekwondo