Li, Zhi

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EDUCATION

University of California, Los Angeles   **Los Angeles, CA**
M.S. in Mechanical Engineering   09/2017 to 12/2019
Overall GPA 3.92/4.00

Harbin Institute of Technology   **Harbin, China**
B.S. in Aerospace Engineering   09/2013 to 07/2017
Overall GPA 3.83/4.00

RELATED COURSEWORK

Robotics: Kinematics of Robotic Systems, Dynamics of Robotic Systems, Control of Robotic Systems, Neural Network and Deep Learning.

System and Controls: Feedback and Control Systems; Stochastic Estimation; Stochastic and Probability Processes; Linear Dynamic System; Linear Optimal Control; System Identification.

SELECTED PROJECTS

Objects Grasping Detection   Jan 2019 to Mar 2019

- **Worked on a project building deep Convolution Neural Network for objects grasping detection.**
  - Deep CNN is built for grasping detection by using open datasets (Cornell grasping dataset and Jacquard) in Pytorch framework.
  - The grasping is represented by bounding boxes with 5 parameters (center coordinate, width, height and rotation angle).

Aerial Manipulation system.   Aug 2018 to Jan 2019

- **Worked on a project trying to build Aerial Manipulator (attach robotic arm under quadcopter) for object grasping tasks in an indoor environment.**
  - Aerial Manipulator is navigated by Motion Capture System (Optitrack). The position and orientation information are transferred through Wi-Fi.
  - 2 loop Proportional Derivative control algorithm is implemented for quadcopter stabilization.

Typing Robot   Mar 2018 to June 2018

- **Worked on a project implementing Proportional Derivative control with gravity compensation to build a robot arm that can complete typing tasks.**
  - Built the robot, including 3D model design and got the parts of the robot by laser cutting piece of wood.
  - Researched on the kinematics, dynamic model of robot arm and control algorithms for controlling a two-link robot arm to type certain words and sentences on the keyboard.

Autonomous Navigating Mobile Robot   Feb 2017 to Jun 2017

- **Worked on a project focusing on ORB-SLAM by using RGBD camera, recognizing obstacles from generated map and motion planning algorithms for mobile robots. Both simulation and physical verification of real-time SLAM and motion planning in the unknown environment are realized.**
  - Built map using ORB-SLAM in an indoor environment.
  - Using Random Sample Consensus (RANSAC) to distinguish ground and obstacles in point clouds.
  - Researched on the combination of RRT* and rolling planning, obstacle avoidance strategy.
  - Simulated the algorithm on ROS and did experiment on XQ-4Pro robot.

Infrared tracking simulator testing system — May 2015 to May 2016

- **Participated in a project of Laboratory of Spacecraft Navigation Control, HIT. I was involved in design of a testing system for infrared tracking simulator based on virtual instrument and IOT technology.**
- Built testing system for automatic experimental data collection, data saving, data analysis and data sharing on the internet using LabVIEW.
- Designed a control system of infrared target simulator using LabVIEW.

Mechanical Bird Digital Model Design — Nov 2013 to Apr 2014

- **Participated in 2014 National Competition for Digital Design of Mechanical Product sponsored by China National Experimental Teaching Demonstration Center of Educational Institutions and Autodesk (China) Inc. Together with the other team member, I was in charge of designing mechanical bird digital model based on 3D printing technology.**
- Designed the structure and built 3D model of the mechanical bird using Autodesk Inventor.
- Analyzed material strength of the key areas.

SKILLS

Computer Language: Python, C++, Matlab, LabVIEW, Latex

Tools/Framework: Robot Operating System (ROS), Pytorch, TensorFlow, OpenCV

Software: Solidworks, AutoDesk Inventor

HONORS & AWARDS

National Instruments Certified LabVIEW Associate Developer (May 2016 to May 2018)

Honorable Mention in 2014 Mathematical Contest in Modeling (MCM).