

# ChaoLiu

Robotics Researcher

## contact education

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Sept, 12'–May, 14'

**Master** of Science in Engineering in Robotics  
*School of Engineering & Applied Science, University of Pennsylvania*  
Research Assistant at ModLab in GRASP Laboratory  
Teaching Assistant for Design of Mechatronics Systems(MEAM 510)

3.61/4.00

Sept, 08'–June, 12'

**Bachelor** of Science in Mechanical Engineering and Automation  
*School of Mechanical Engineering, Dalian Jiaotong University*  
Specialization in Mechatronics, minor in Business Administration

89.5/100

## projects

### languages

Chinese(native)  
English(professional)

Mar, 14'–Apr, 14'

#### Localizetion and Mapping

Simultaneous Localization and Mapping

- Mapped an indoor environment by an IMU and a LIDAR on a mobile robot;
- Constructed the 2D map using a particle filter and occupancy grid algorithm.

### courses

Learning in Robotics,  
Machine Learning,  
Digital Signal  
Processing,  
Embedded System,  
Control,  
Mechatronics

Nov, 13'–Dec, 13'

#### PhanToM Robot Control System(Our Own Myo)

Mechatronics and Machine Learning

- Controlled muscle sensors(EMG) and an IMU to measure the muscle activation and motion, and output some control commands to a robot and a quadrotor;
- Designed a vehicle robot with Omni-wheels and holonomic control;
- Designed a board with an IMU, an xBee and a PID controller for a quadrotor.

Nov, 13'–Dec, 13'

#### Yelp Rating Prediction

Machine Learning

- Processed the data with NLP methods to classify the words;
- Used Naive Bayes, SVM and our own kernel to train the data and got a model.

### strengths

Embedded System,  
C/C++, Python, Matlab,  
Control, Motor,  
PCB, Eagle, Altium,  
SolidWorks

July, 13'–Aug, 13'

#### Persona Robot

Mechatronics and Control

- Designed a force sensor with IR and phototransistors and made the PCB;
- Designed a servo controller to control the servos for the tablet motion;
- Designed a PID controller for the base motion and mast rotation with encoders.

Feb, 13'–Mar, 13'

#### M4 Peripheral Design -- mTouch

Embedded System

- Used FT5306 as the capacitive touchscreen controller and designed the interface PCB and code for the STM32F373(Cortex-M4) via IIC.

Dec, 12'–June, 13'

#### Low-cost Laser Range Finder

Embedded System

- Simulated SCCB protocol on STM32F373 and configured a camera(OV7670) in RGB RAW mode;
- Designed the PCB including the microcontroller, the camera and the laser;
- Transmitted the data to the master via SPI.

Nov, 12'–Dec, 12'

#### Robockey

Mechatronics

- Designed 3 robots to compete in Hockey games;
- Localized the robots with Wii cameras and applied wireless communication;
- Designed PD controller to find the puck and move to the goal;
- Controlled the solenoid to kick the puck;

## working experiences and organizations

Oct, 12'–Now

**Research Assistant at ModLab in GRASP Laboratory**

Aug, 13'–Dec, 13'

**Teaching Assistant for Design of Mechatronics Systems (MEAM 510)**