ChaoLiu
Robotics Researcher

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languages
Chinese (native)
English (professional)

courses
Learning in Robotics,
Machine Learning,
Digital Signal Processing,
Embedded Systems,
Control,
Mechatronics

strengths
Embedded Systems,
PCB (Eagle, Altium),
CAD (SolidWorks, Pro/E),
C/C++, Python, Matlab,
Control, Motors,
Git, SVN

education

Sept '12 - May '14 **Master** of Science in Engineering in Robotics _3.61/4.00_
School of Engineering & Applied Science, _University of Pennsylvania_

Sept '08 -June '12 **Bachelor** of Science in Mechanical Engineering and Automation _89.5/100_
School of Mechanical Engineering, _Dalian Jiaotong University_
Specialization in Mechatronics, Minor in Business Administration

projects

June '5 - Sept '6 **SMORES Electronics** _Electronics_
- Designed main CPU board with STM32F303(Cortex-M4), including JTAG interface, IIC interface, SPI interface for a Wifi chip and motor drivers;
- Designed face board with ATmega88a, coil-driving circuit by MOSFETs, coil communication circuit with a RF Power Detector and 2 ADCs for encoders.
- Implemented basic libraries for STM32F303 and ATmega88a.

Mar '14 - Apr '14 **Localization and Mapping(SLAM)** _Robotics and Machine Learning_
- Leveraged mobile-robot-mounted IMU and LIDAR to map indoor environment;
- Constructed 2D map using a particle filter and occupancy grid algorithm.

Nov '13 - Dec '13 **PhanToM Robot Control System(Our Own Myo)** _Mechatronics and Machine Learning_
- Designed wearable device using IMU and EMG(read muscle signals) to measure muscle activation and motion to control robots;
- Designed mobile robot with Omni-wheels and holonomic control;
- Designed board with IMU, xBee and low-level PID controller for a quadrotor.

July '13 - Aug '13 **Persona Robot** _Mechatronics and Control_
- Designed infrared-based force sensor and associated PCB;
- Implemented servo controller for tablet-driven motor;
- Designed PID controllers for base motion and mast rotation.

Feb '13 - Mar '13 **M4 Peripheral Design -- mTouch** _Embedded Systems_
- Used FT5306 controller for capacitive touchscreen;
- Designed the interface PCB and code for STM32F373(Cortex-M4) via IIC.

Dec '12 - June '13 **Low-cost Laser Range Finder** _Embedded Systems_
- Simulated SCCB protocol on STM32F373(Cortex-M4) and configured the camera(OV7670) in Raw RGB mode with VGA resolution;
- Designed the PCB including microcontroller, camera and laser;
- Transmitted the data to the master via SPI.

Nov '12 - Dec '12 **Robockey** _Mechatronics_
- Competed in 3-on-3 hockey played by fully-autonomous robots;
- Localized robots with infrared cameras and applied wireless communication;
- Designed PD controller for motor and integrated solenoid for "shooting";

working experiences and organizations

Oct '12 - Now **Research Assistant in ModLab (UPenn GRASP Laboratory)** _Robotics_
Focus on Embedded Systems Design and Control (Low-cost Laser Range Finder, Persona Robot and SMORES Electronics)

Aug '13 - Dec '13 **Teaching Assistant for Design of Mechatronics Systems (MEAM 510)** _Mechatronics_