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Zhilong Li

Education Background

Jan.2020-Dec.2021(Estimated) **University of Southern California (USC), Los Angeles, CA, United States**
M. S. in **Mechanical Engineering**, Viterbi School of Engineering

Sep.2015-Jul.2019 **Xiamen University Tan Kah Kee College (XUJC), Zhangzhou, China**
B. Eng. in **Mechanical Design & Automation**, School of Mechanical & Electrical Engineering

Main Master Courses

Robot dynamic and control
Skills and knowledge to analyze kinematics, dynamics of robotic systems and use it for control design. Multiple advanced control techniques including Linear Quadratic Regulator (LQR), Model Predictive Control (MPC), Quadratic Program (QP) based nonlinear control, and trajectory optimization.
Skills: Kinematics and dynamics of robotic systems, Feedback control systems for robotics, Control of Legged robot

Robotics
Fundamental skills for modeling and controlling of dynamic systems for robotic applications. Control theory; Kinematics; Dynamics; Sensor processing; Real-time operating systems; Robot labs.
Skills: ROS, Python

Linear Control System
Transform methods, block diagrams; Transfer functions; Stability analysis; Root-locus and frequency domain analysis and design; State space and multiloop systems
Skills: Matlab, Control system analysis

Foundations and Applications of Data Mining
Data mining and machine learning algorithms for analyzing very large data sets. Using Map Reduce technics and Spark engine to perform cluster parallel computing. [Github]
Skills: Python, Spark engine, Machine Learning

Projects

Jan 2021-Now **Robotic Embedded Systems Laboratory**, Research Assistant
Working on an ongoing multi-target search and tracking project now.
Objective: to track multiple targets by multiple airborne cameras as sensors, getting stable and robust tracking result
Personal Responsibility: position estimation and tracking algorithm implementation, building the distributed Kalman filter and using probability map to get a consensusual result from all trackers
Technical Part: ROS, Python, Docker

May 2016-Nov.2017 **Semi-automated Case Sealer to Fully Automated Case Sealer**, *Tech team*
Acquired 7 patents and investment intent of RMB 1,000,000 in the 9th Challenge Cup
Objective: to simplify case sealing steps for the needs of express delivery industry, researching and developing bottom folding sealing machine and efficient self-adaptive double-sided sealing workstation
Personal Responsibility: project structural design, control circuit design and control program design, software programming; business proposal compilation
Technical Part: CAM, SolidWorks, Fusion360, AltiumDesigner

Mar.2017-May 2017 **Automatic Obstacle Avoidance Carbon-free Vehicle**, *Member of a three-person team*
3rd Prize, 5th National Undergraduate Training Program for Comprehensive Engineering Ability
Objective: to achieve the functions of avoiding track barriers and completing uphill and downhill tasks
Personal Responsibility: circuit design, control program design, partial overall structural design, debugging
Technical Part: 3D Printing Model; CNC, PCB, Altium Designer;

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Dec.2016-Mar.2017 **RoboMaster**, *Mechanical Group Leader*

Objective: to develop a variety of ground and air robots to compete against other teams; to gain practical skill, cultivate strategic thinking skill and study how to create advanced intelligent robots from the competition

Personal Responsibility:

- ✓ Designed a mechanical claw to carry obstacle blocks, mounted on an omnidirectional mobile platform
- ✓ Made a set of gimbal system to control the barrel of the robot, capable of stabilizing the barrel while aiming at the shooting target
- ✓ Enhanced teamwork from co-design to assembly process with 40 members; looked at issues from multiple angles

May 2016-May2017 "**Water Turbine" Light Washing Machine**, *Project leader of a five-person team*

National Undergraduate Training Program for Innovation and Entrepreneurship

Objective: to offer a lightweight washing machine solution that differs from conventional structure and is affordable to college students, single household and tenants

Personal Responsibility:

- ✓ Engaged in the whole project, from conceiving the idea, implementing details to verifying the project feasibility
- ✓ Designed the turbine-like part's parameter and shape; specially created a stream guide slot at the top to control the spraying rotation angle and direction of the water flow
- ✓ Finished circuit design and laundry control program which includes multiple laundry modes
- ✓ Wrote reports and applied for a patent (authorized)

Technical Part: AutoCAD, 3D Printing Model, SolidWorks, CAM, 3-axies CNC Machining Center

Patent

HU Yuhang, LI Zhilong, ZHUO Decai, HUANG Ziwei, HUANG Jing. 2017. A Fast Automatic Sealing Machine and Its Sealing Method. P.R.China. filed Feb.16, 2017

HU Yuhang, LI Zhilong, ZHUO Decai, HUANG Ziwei, HUANG Jing. 2018. Conveyor-belt Mechanism Used for Sealing Machine. P.R.China. filed Jan.20, 2017 and issued Feb.02, 2018

HU Yuhang, LI Zhilong, ZHUO Decai, HUANG Ziwei, HUANG Jing. 2017. A Fast Automatic Sealing Machine. P.R.China. filed Jan.20, 2017 and issued Feb.02, 2018

JIA Tan, HU Yuhang, ZHUO Decai, LI Zhilong. 2017. Mechanical Bottom Folding Machine and Its Working Method. P.R.China. filed Apr.07, 2016 and issued Dec.08, 2017

JIA Tan, LI Zhilong, XU Hao, JIN Xingxing, LIN Dongrong, WEN Fancheng. 2017. Lightweight Turbo-type Washing Device. P.R.China. filed Apr. 12, 2017 and issued Nov. 14, 2017

HU Yuhang, LI Zhilong, ZHUO Decai, HUANG Ziwei, HUANG Jing. 2017. Sealing Machine Movement. P.R.China. filed Jan.20, 2017 and issued Sep.08, 2017

HU Yuhang, JIA Tan, LI Zhilong, ZHUO Decai, SU Honghong, HUANG Ziwei, LIN Qingqi, HUANG Jing, XIAO Zuhang. 2016. Mechanical Sealing Machine. P.R.China. filed Apr.01, 2016 and issued Sep.28, 2016

JIA Tan, HU Yuhang, ZHUO Decai, LI Zhilong. 2016. Mechanical Bottom Folding Machine. P.R.China. filed Apr.07, 2016 and issued Aug.31, 2016

Honors & Awards

2017-2018	1st Class Scholarship for Academic Excellence, Three Times, XUJC
2017-2018	Merit Student of Outstanding Capacity, XUJC
Nov.2017	3rd Prize, 11th iCAN International Contest of innovation, 1‰
Oct.2016	3rd Prize, 2nd China College Students' "Internet+" Innovation and Entrepreneurship Competition, 1‰