Zhaoliang ZHENG

zhz03@g.ucla.edu | zhz503@eng.ucsd.edu

EDUCATION BACKGROUND

University of California, Los Angeles *September 2019-June 2025*
Ph.D. in Electrical and Computer Engineering

University of California, San Diego *September 2017-June 2019*
MS in Mechanical and Aerospace Engineering Cumulative GPA: 3.71/4.00
Research emphasis: Control and robotics, Path Planning, 3D reconstruction, Machine Learning

Dalian University of Technology (DUT) *September 2013 –June 2017*
BE in Processing Equipment and Control Engineering Cumulative GPA: 3.50/4.00

RESEARCH EXPERIENCE

Bio-inspired robot program (projected-based course) *March 2018-June 2018*

- Programmed in python, and simulated the motion process for control endpoints of robots' legs
- Designed the mechanical structures for the robot, and assembled the robot
- Made adjustments and improvements to resolve the structural defects for the robot
- Conducted programming for the robot

Human Frontier program *March 2018-June 2018*

- Build 3D models for scanned pictures with Agisoft PhotoScan
- Prepared manual for end-users on using Agisoft PhotoScan to build 3D model for stumps
- Tested the influences of different imaging qualities on 3D modeling
- Inspired by GPS and found an innovative and effective approach to calculate the minimum scanned pictures required for 3D modeling

Project-Based Machine Learning Research Program—Fake News Detection
Team Leader *January 2018-April 2018*

- Conducted hyper-tuning to choose a set of optimal hyper-parameters for the model of the classifier
- Processed news through integrating multiple Natural Language Processing methods, including text：doc2vec+title: word2vec,extended doc2vec, and TF-IDF+doc2vec
- Prepared the whole pipeline to process and classify original material of news

Ships Identification in Satellite Images (Machine learning project-based course)
Team Leader *March 2018-June 2018*

- Processed image data through multiple classifiers, including: XGBoost, random forest, Convolutional Neural Network with Stochastic Gradient Descent
- Compared different methods and their results
- Completed the design for the Poster, and drafted key parts of the research paper

Color Segmentation and Barrel Detection *January 2019-February 2019*

- Hand-label program design to label training data from the pictures
- Color segmentation using self-developed logistic regression and Gaussian Mixture Models (EM algorithm and K-mean algorithm)
- Using color information and refined mask to do barrel detection

Particle Filter SLAM *February 2019-March 2019*

- Multiple data combination and sensors data synchronization
- Mapping based on laser scan and make sure the transforms are correct
- Particle filter algorithm, includes prediction step and update step.
- Texture map based on RGBD sensor and the occupancy grid map generated by particle filter.

Visual-Inertial SLAM via EKF *March 2019-June 2019*

- Used the EKF prediction step to estimate the IMU position.
- Used the EKF update step to update the landmarks based on our assumptions and IMU trajectory.
- Combined prediction step and estimation step to achieve SLAM.

Path Planning Algorithm on Beagle Bone Platform *January 2019- June 2019*

- Finished mechanical design for Edu Rover Version II
- Finished the sideway mode balance simulation in Simulink
- Get the tracking system up and running

- Transporting signal back and finish MATLAB data streaming

Target-oriented UAVs Auto-control based on 3D Point Cloud Map *September 2018- June 2019*

- Finished Target-oriented RRT algorithm
- The algorithm has been tested in 3D point cloud map
- Finished the UAVs simulation and path tracking algorithm

Patent

Multifunctional Doula Chair for pregnant woman (designed and modeled with Inventor)
Application has been approved by State Intellectual Property Office of the P.R.C in 01/04/2019

Thesis

Position and attitude control of ROV based on dynamic positioning system

- Published in Dalian University of Technology in July. 2017, DUT Outstanding Undergraduate Thesis, p118

A Novel BTT and STT Switch Control for SAM Missiles

- To be submitted to EI International Conference in 03/2019 and accepted in 08/2019
- Conference proceedings
- First Author

Point Cloud Based Target-Oriented 3D Path Planning for UAVs

- To be submitted to the International Conference on Unmanned Aircraft Systems oi 02/2020
- First Author

RESEARCH EXPERIENCE

Electrical Design Tutor in MF Education Lab *June 2019- August 2019*

- Based on embedded C language to guide students and beginners to complete all kinds of electronic design.
- Complete robot design, and intelligent product design based on different projects.

HONORS AND AWARDS

2019-2020 Graduate Dean's Scholar Award, UCLA *Fall 2019*
Outstanding Undergraduate Thesis, DUT (3% of all the DUT students) *June 2017*
Academic Excellence Scholarship 2015-2016 (15% of all the DUT students) *October 2016*
First Prize, 2016 Mathematical Contest in Modeling (5% of all the Contestants) *February 2016*
Scientific Innovation Scholarship 2014-2015 (4% of all the DUT students) *October 2015*

SKILLS AND QUALFICATIONS

- **Programming Language**— C Language (5 years), python, Matlab (4 years)
- **Mechanical Design Software**— Inventor 3D (6 years), CAD (6 years), Solidworks (3 years)
- **Simulation Software**— Simulink(4 years), V-REP
- **Motion Tracking system**— VICON Tracker, OptiTrack
- **3D Images Software**— Agisoft photoscan, Max Misher, VISCORE Viewer
- **3D Printing technique**— G-code generation, Ultimaker series 3D printers
- **Images/Video Post-processing**— Photoshop (6 years), Lightroom (5 years), Premiere (6 years), AE
- **Qualifications**— CLAD (Certified LabVIEW Associate Developer), Open-Water Diver (OWD)