De Huo

2637 Ellendale Pl, Los Angeles, CA 90007 | (213)705-5908

dehuo@usc.edu | https://derichuo.com/

EDUCATION

University of Southern California *(GPA: 3.67)* **Los Angeles, CA**

M.S. in Computer Science Aug 2019 - Dec 2021

Beihang University **Beijing, China**

B.Eng. in Engineering Mechanics Sept 2015 - Jun 2019

TECHNICAL STRENGTHS

Programming Languages: C/C++, Java, JavaScript, JSX, Python, HTML/CSS, Unix Shell, SQL.

Tools & Libraries: ROS, PyTorch, OpenCV, Ajax, jQuery, Git, Docker, AngularJS, React, MySQL, Ardupilot, PX4, PCL.

Others: Numerical Integral and Differential, Embedded System Control, Dynamics Simulation (Adams, Fluent).

EXPERIENCES

Semio **Los Angeles, CA**

Software Engineer Intern May 2020 - Aug 2020

- Tracked and visualized body part motion trajectory in decaying pattern with Dynamic-Reconfiguration in ROS.
- Processed THÖR dataset to display multiple moving persons' 3D point cloud and head orientation in real time.
- Reproduced part work of *Bayesian Estimator for Partial Trajectory Alignment* to train a model for behavior recognition.

National Laboratory of Pattern Recognition, CASIA **Beijing, China**

Software Engineer Intern Mar 2019 - Jul 2019

- Implemented inference process of neural networks in C++ and improved executing efficiency by using Mobile AI Engine.
- Accelerated neural networks on mobile platforms and ARMs such as *RK3399* and *Raspberry Pi.*
- Developed fast multi-thread video stabilization algorithms based on Kalman Filter, Gaussian Filter and Visual Odometry and benchmarked algorithms with PSNR and MAE metrics.
- Contrasted multiple human face detection algorithms' performance *(Dlib, libfacedetection, Arcsoft SDK, etc.)* on ARMs.

Institute of Automation and Control, Beihang University **Beijing, China**

Research Assistant Jan 2017 - Jun 2017

- Researched on omni-directional copters to decouple the relation between multi-copters' posture and movement.
- Proposed collectively a novel flight control algorithm based on quarternion theory and 8 spatial vectors.
- Achieved highly-precise indoor localization and long-time spot hovering without floating by using Pozyx platform.

PROJECTS

Software Quality Analysis and Visualization -- JavaScript, HTML, React, Docker Jan 2020 - Jun 2020

- Visualized quality data along certain software development history based on different metrics through React framework.
- Designed several interactive modules for users to dynamically acquire and analyze data easily. *www.squaadweb.com*

Unix Kernel --C, Unix Shell Aug 2019 - Dec 2019

- Developed pivotal parts of a Unix kernel including Virtual File System and Virtual Memory as well as related kernel functions and basic data structures *(HashMap, LinkedList, etc.)* to manage all kinds of file systems and user address spaces.
- Implemented several interrupt and trap functions to handle different signals and exceptions.
- Processed input commands in terminals and created multiple processes with multiple threads to handle different requests.

Dense Visual SLAM with Optical Flow --C++, OpenCV, SLAM, ROS Jul 2018 - Dec 2018

- Conducted research on dense stereo SLAM in dynamic surroundings with RTAB-MAP on the basis of Visual Odometry.
- Added Optical Flow to detect moving objects in frames and ruled them out when extracting feature points and mapping.
- Performed testing on embedded mapping and navigation algorithm on a robot car with Nvidia TX2.

Temporal Segmentation of Actions in Videos --Python, PyTorch, HMM, Clustering Jun 2018 - Sept 2018

- Researched on weakly supervised learning of video action segmentation based on Hidden Markov Model with a polymorphic neural network to infer the emission probability of HMM.
- Incorporated spectral clustering of frames' feature vectors into HMM and decoded the HMM with Viterbi algorithm to acquire optimal action label distribution in a video frame sequence.