

# De Huo

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## EDUCATION

**University of Southern California** (*GPA: 3.67*)

*M.S. in Computer Science*

**Los Angeles, CA**

Aug 2019 - Dec 2021

**Beihang University**

*B.Eng. in Engineering Mechanics*

**Beijing, China**

Sept 2015 - Jun 2019

## TECHNICAL STRENGTHS

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

Tools & Libraries: ROS, PyTorch, OpenCV, RTAB-MAP, ORB-SLAM, ArduPilot, PX4, Git, Docker, React, MySQL.

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 quaternion 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 acquire and understand data easily. [www.squaadweb.com](http://www.squaadweb.com)

**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.

**"Feng Ru Cup" Competition of Academic and Technological Works** --C++, ArduPilot

Nov 2017 - Jun 2018

- Applied Runge-Kutta 3th Order Method and quaternion theory to the calculation of 9-axis inertial parameters based on raw data from JY901 IMU and visualized UAV's motion trajectory and posture with respect to time steps.

## RECOGNITION

- Champion of *Design Competition in Program of Aerospace Design United Courses (PADUC)*