

# KAIWEN ZHOU

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## EDUCATION

**Zhejiang University** *B.S. in Statistics* **GPA: 3.88/4.00** Nov 2019 – Present  
Main courses: *Mathematical Analysis, Advanced Algebra, C Programing, Fundamentals of Data Structures, Discrete Mathematics, Mathematical Software, Probability Theory, Mathematical Statistics, Mathematical Modeling, Scientific Computing, Real Variable Analysis, Regression Analysis, Computer Simulation, Multi-Variable Statistical Analysis, Stochastic Processes, Time series*

## RESEARCH EXPERIENCES

**A Study on Deep Learning, Neural Networks and Computer Vision** **Hangzhou, China**  
*Researcher* Dec 2019-Jan 2020

- Used machine learning KNN algorithm to complete MNIST handwritten character recognition; replaced all loops with numpy functions and achieved 95.4% of accuracy rate on MNIST dataset.
- Utilized convolutional neural networks to conduct handwritten character recognition; wrote softmax functions, ReLU activation functions, output layers, fully connected layers and etc. by using the underlying language to build a convolutional neural network, and used it on MNIST dataset.
- Implemented semantic segmentation and target recognition in driving scenarios; learned and adjusted different hyperparameters; compared the effects of semantic segmentation and target recognition under different hyperparameters.

**Bionic Intelligent Individual Behavior Project** **Hangzhou, China**  
*Research Assistant* Nov 2019-Present

- Take videos of a certain amount of drosophila flying inside the box; obtain the three-dimensional trajectory of drosophila by using image recognition algorithms.
- Construct a neural network using PyTorch which could predict future trajectory based on former flying trajectory.
- Identify drosophila flight patterns.

**PDE-based Image Denoising** **Hangzhou, China**  
*Research Member* Jul 2019-Aug 2019

- Collected available PDE techniques to reduce image noise, learned related principles; wrote codes for image denoising and verified them with several typical images.
- Effectively prevented over-diffusion and edge blurring in image denoising when relevant indicators fell.
- Selected two effective denoising methods for cartoon images, character color images, and gray scale images.
- Learned related applications of partial differential equations and functionals; improved programming skills.

**OpenCV-based Dual Camera Calibration** **Hangzhou, China**  
*Research Member* Jul 2019-Aug 2019

- Learned the mathematical principles and computer theory of camera calibration.
- Utilized Python and OpenCV to write a biphasic calibration program; took photos of a fixed Charuco calibration plate with two cameras; obtained the internal and external camera parameters after uploading photos into the program.
- Checked and verified the correctness of the program by inputting identical and similar photos.
- Successfully wrote a reliable program that could calibrate internal and external parameters of dual cameras.

## PROJECT EXPERIENCE

**Dream Summer Program** **Hangzhou, China**  
School of Mathematical Sciences, Zhejiang University Jul 2018-Jul 2018

- Worked in a team of 10 people on exploring the developments of national key areas; planned visits to a number of companies.
- Conducted interviews with managerial personnel from each company; summarized the interview content and posted the company visits articles onto school websites.
- Learned about Alibaba's unique corporate sculpture and martial arts; learned new retail technologies, AR shopping guides and other new technologies; gained a better understanding of problems in information network security and related technologies after visiting Zhejiang Yuanwang Information Co., Ltd.

## AWARDS

•First Prize in National College Students' Mathematical Modeling Contest	Sep 2019
•Zhejiang Provincial Government Scholarship	Oct 2019
•Zhejiang University Second-class Scholarship	Sep 2019
•Third Prize in Zhejiang Undergraduate Physics (Theory) Innovation Contest	Dec 2018
•Third Prize in Zhejiang Undergraduate Advanced Mathematics (Calculus) Competition	May 2018

## SKILLS & LANGUAGES

**Computer skills:** Python; C; Matlab; R; Stata

**Languages:** Chinese (Native); English (TOEFL 97; R: 28; L: 23; S: 20; W: 26)