

# Haotian Wu

Imperial College London

Zhejiang University

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## Education

- **Zhejiang University** Hangzhou, China  
*M.Sc. Electrical Information Engineering* 2018.9 – 2020.03
  - *Excellent Postgraduate Students' Award*
  - Course Mark: 84.5/100
  - Supervisor: Prof. Ji Xiang
  - Project: Visual Intelligence and Control of Unmanned Surface Vehicle
- **Imperial College London** London, UK  
*M.Sc. Control Systems* 2017.9 – 2018.9
  - *Distinction Degree*
  - Course Mark: 77.7/100, Graduate Project Mark: 82.7/100
  - Supervisor: Prof. Richard Vinter
  - Thesis: Tracking with bearing and range measurements
- **University of California, Berkeley** California, USA  
*Exchange programme* 2016.7 – 2016.9
  - Completed Session E and gained 3 credits
- **Zhejiang University** Hangzhou, China  
*B.Sc. Automation* 2013.9 – 2017.7
  - *Graduated with Honour, Excellent graduation project*
  - GPA: 3.71/4.0 (86.21/100) Graduate Project Mark: 98/100
  - Supervisor: Prof. Zhiyun Lin
  - Thesis: Navigation and Motion Control of Mobile Robot based on special landmarks
  - Outstanding undergraduate thesis in Zhejiang University
  - Outcome is applied in the Cotek-Robotics Co., Ltd.

## Publications

- 1) Haotian Wu, Shimin He, Zejun Deng, et al., *Fishery monitoring with AUV based on Yolo and SGBM*. The 38th Chinese Control Conference (2019 CCC)  
(The related video: <https://youtu.be/Pb2Nfup71D0> )  
(<https://ieeexplore.ieee.org/document/8866087/> )
- 2) Haotian Wu and Ji Xiang, *Hypothetical Analytic Filter for the tracking with bearing and range mixture measurements*. The 31st Chinese Control and Decision Conference (2019 CCDC).  
(<https://ieeexplore.ieee.org/document/8832333> )

- 3) Zhe Cao, Jian Xu, Wei Xiao, Yanjing Gao, Haotian Wu, *A Novel Method for Detection of Wind Turbine Blade Imbalance Based on Multi-Variable Spectrum Imaging and Convolution Neural Network*. The 38th Chinese Control Conference (2019 CCC).  
(<https://ieeexplore.ieee.org/document/8865600/>)
- 4) Haotian Wu, Junjie Liu and Kaijian Liu, *Self-correcting mobile robot based on special landmark and fuzzy PID control*. Industrial Control Computer (in Chinese), (2017.11).  
(The related video: <https://youtu.be/r0F4JZ1-VXM> )
- 5) Haotian Wu, QianYing Ye and Kaijian Liu, *Research on agricultural mobile robot based on random forest*. Industrial Control Computer (in Chinese), (2017.10).

## National Invention Patents

- 1) Self-correction algorithm based on attitude detection and special landmark
  - Patent No.201710378237.7, Second inventor, Status: Patented
- 2) Agricultural mobile robot based on Random Forest
  - Patent No.201710367405.2, Second inventor, Status: Patented
- 3) Smart Water-saving Faucet Based on Neural Network and SCM
  - Patent No.201610135909.7, First inventor, Status: Patented
- 4) Cooperative System of Indoor Mobile Robot Based on QR code and Fuzzy Algorithm
  - Patent No.201610964289.8, First inventor, Status: Patented
- 5) A fishery growth monitoring system
  - Patent No.202010436332.X, Second inventor, Status: Under Examination

## Research Experience

- Cloud & AI Group** Huawei Research Institute  
*Project: Change detection with GAN and Siamese net* 2020.4 – now
  - Change detection
  - Design Siamese Net based generator with focal entropy loss
  - Introduce edge information as prior knowledge into the Discriminator
- State Key Laboratory of Industrial Control Technology** Zhejiang University  
*Project: Visual Intelligence of Unmanned Surface Vehicle* 2019.6 – 2020.03
  - Visual Odometry
  - Use the ORB-SLAM2 architecture
  - Based on the ROS and Jetson TX2
- State Key Laboratory of Industrial Control Technology** Zhejiang University  
*Project: Visual Intelligence and control of Autonomous Underwater Vehicle* 2018.10 – 2019.06
  - Object detection (YOLO)
  - Convert the model into Tensor RT (for acceleration)
  - Use the Grad-CAM to analyze the attention of the CNN
  - (Related video of fishery applied AUV: <https://youtu.be/tDh8MKWqdIM>)

- Stereo vision for fishery application (SGBM)
- Tracking problems and filters for AUV  
(Related video of AUV: <https://youtu.be/i9fgLTIMUnQ>)

- **Control and Power Research Group**

Imperial College London

*Project: Nonlinear filter for tracking problems*

2017.9 – 2018.9

- Research on the nonlinear filter for the bearing and range tracking problems

- **National Undergraduate Research Training Program**

Zhejiang University

*Project: Navigation and Motion Control of Mobile Robot*

2016.3 – 2016.11

- Correct the inertial motion by the image rectification
- Build the sparse map and design the navigation based on the special landmark
- Plan the path based on fuzzy algorithms  
(Related video of the smart car: <https://youtu.be/r0F4JZ1-VXM>)

- **Provincial Undergraduate Research Training Program**

Zhejiang University

*Project: Two-Wheel Self Balancing Smart Car*

2015.3 – 2016.3

- Design the PCB
- Balance the smart car based on Kalman filter
- Image Geometric Rectification in Smart Car  
(Related video of balance performance: [https://youtu.be/o0YHF2h\\_kf8](https://youtu.be/o0YHF2h_kf8))

## Internships and work experience

- **Huawei Research Institute, Cloud & AI Group**

*Position: Computer vision algorithm engineer*

2020.4 – now

- Change detection on Remote sensing image
- Algorithm based on Siamese Net and GAN

- **Huawei Research Institute, Cloud & AI Group**

*Position: Computer vision algorithm engineer*

2019.6.14 – now

- Build the model to detect the workers whether wearing safety helmets and safety clothes
- Algorithm based on the YOLOv3 and Resnet34

- **Huawei Research Institute, 2012 Laboratories**

*Position: Machine learning algorithm engineer*

2016.12 – 2017.6

- Build the model to predict the user churn based on random forest algorithm

## Awards and Honors

- 1) National Scholarship for Postgraduate Students
  - 2019.10
- 2) Outstanding postgraduate student in Zhejiang University
  - 2019.10
- 3) Postgraduate Studentship in Imperial College London

- 2017.9 to 2018.9

4) Outstanding undergraduate thesis in Zhejiang University

- 2017.5

5) The Scholarship for Academic Excellence in Zhejiang University (4 times)

- 2nd and 3rd bachelor academic year

- 1st and 2nd postgraduate academic year

6) The Scholarship for Outstanding Students in Zhejiang University (4 times)

- master academic year

- 2nd and 3rd bachelor academic year

- 1st and 2nd postgraduate academic year