

# HAO WANG

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National Laboratory of Pattern Recognition

Institute of Automation, Chinese Academy of Sciences

## EDUCATION

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### The University of Edinburgh

*MSc with Distinction in Informatics*

Supervisor: Prof. Robert B. Fisher

2018 - 2019

*Edinburgh, UK*

### Beijing University of Posts and Telecommunications

*B.Eng. in Telecommunication Engineering*

Supervisor: Prof. Aidong Men

2014 - 2018

*Beijing, China*

### University of Skövde

*Exchange Student in informatics*

Concentration: Operating Systems, System Administration

Sept. 2016 - Jan. 2017

*Skövde, Sweden*

## RESEARCH INTERESTS

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My research interests lie in the general digital image analysis, assisted by the advanced computer vision techniques, especially in 3D vision & graphics scenario.

## PUBLICATION

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### Conference

#### Beyond 3DMM Space: Towards Fine-grained 3D Face Reconstruction

ECCV 2020

Xiangyu Zhu, Fan Yang, Di Huang, Chang Yu, **Hao Wang**, Jianzhu Guo, Zhen Lei, Stan Z. Li

### Pre-print

#### Face Forgery Detection by 3D Decomposition

arXiv

Xiangyu Zhu\*, **Hao Wang\***, Hongyan Fei, Zhen Lei, Stan Z. Li (\*Equal contribution)

## ACADEMIC PROJECTS

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### Digital Face Manipulation Detection

Mar. 2020 - Nov. 2020

- Proposed to analyze fake face images with 3D decomposition
- Proposed a novel facial forgery detection with facial detail
- Introduced a supervised Attention and a multi-modality solution

### Fine-grained 3D Face Reconstruction

Oct. 2019 - Mar. 2020

*ECCV 2020*

- Proposed a novel solution to construct large-scale fine-grained 3D data from RGB-D images
- Constructed a new dataset, Fine-Grained 3D face (FG3D), with 200k samples for training
- Proposed a Fine-Grained reconstruction Network (FGNet) concentrating on shape modification in UV space

### Gender Identification from 3D Facial Surface Model

Feb. 2019 - Aug. 2019

*Dissertation for Master's degree*

- Proposed a novel method on 3D facial gender identification with machine learning & conformal mapping
- Evaluated the proposed method and obtained competitive performance (accuracy over 88%)

### Action Recognition Model with First-Person Videos

Jan. 2019 - Mar. 2019

- Evaluated third-person action recognition methods with first-person datasets
- Compared the differences between the third and first-person methods
- Proposed and studied a new model combining MobileNet and Two-stream Pyramid

### Image Super-Resolution with Convolutional Neural Network

Dec. 2017 - June 2018

*Dissertation for Bachelor's degree*

- Realized the subpixel-based image super-resolution method with pixel shuffle
- Tested the model on both image and video datasets

## RESEARCH EXPERIENCE

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**National Laboratory of Pattern Recognition, CASIA**  
*Research Intern*

Oct. 2019 - Present  
*Beijing, China*

- Advisors: Prof. Xiangyu Zhu, Prof. Zhen Lei
- Projects: Fine-grained 3D face reconstruction; Face forgery detection

**Next Generation Internet Research Center, BUPT**  
*Undergraduate Research Assistant*

May 2017 - Oct. 2017  
*Beijing, China*

- Advisor: Prof. Yang Liu
- Projects: Optimization on DASH-based video service in high-speed railway networks with stochastic methods; Network flow variation detection with mobile crowd sensing

## SKILLS

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**Programming Languages:** Python, MATLAB, C/C++, Java, VHDL, Verilog, Assembly Language

**Tools:** PyTorch, Tensorflow, OpenCV, Dlib

**Others:** Linux, Git, SQL, L<sup>A</sup>T<sub>E</sub>X, FPGA, Arduino, Raspberry Pi

## REFERENCES

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**Robert B. Fisher**  
*Professor*

The University of Edinburgh  
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**Zhen Lei**  
*Professor*

Chinese Academy of Sciences  
 zlei@nlpr.ia.ac.cn

**Zhuqing Jiang**  
*Assistant Professor*

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