

Zhihang Ren

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Education

- *Master of Science in Electrical and Computer Engineering* Expected Jun. 2019
University of California, San Diego
- *Bachelor of Engineering in Electronic and Electrical Engineering* Jun. 2017
University of Glasgow
- *Bachelor of Science in Electronic Engineering* Jun. 2017
University of Electronic Science and Technology of China

Undergraduate Overall GPA: 3.90/4.0 Graduate Overall GPA: 3.746/4.0
Core courses: Digital Image Processing, Random Process, Convex Optimization, Statistical Learning, Neural Networks/Pattern Recognition, Deep Learning and Applications, Computer Vision, Sensing & Estimation in Robotics, Planning & Learning in Robotics

Scholarships & Awards

National Scholarship (top 1.5%) in two consecutive years (2013-2014, 2014-2015) awarded by the Chinese Department of Education
People's First Prize Scholarship (top 5%) in 2015-2016 semester awarded by the Chinese Department of Education
Academic Excellent Scholarship (top 5%) in two consecutive years (2013-2014, 2014-2015) awarded by the Glasgow College, UESTC

Research Experience

Deep Learning, Medical Imaging Dec. 2018 – Present

DNN for SPECT imaging

- Try to accelerate the reconstruction of the SPECT image by using DNN
- Aim to utilize total variation prior for the reconstruction of high resolution image

Deep Learning, Computer Vision

Feb. 2018 – Present

Bias in Action Recognition

- Studied representation biases on state-of-the-art action recognition datasets.
- Established relationship between typical algorithms and different representations

Image and Video Processing

May. 2017 – Aug. 2017

Coding Trajectory: Enable Video Coding for Video Denoising

- Implemented an efficient and robust video denoising method.
- Enable video coding information for video denoising.
- Proposed a novel strategy for weighting noisy image patches.

Image and Video Processing

Dec. 2016 – May. 2017

MeshFlow Video Denoising

- Implemented an efficient and robust video denoising method.
- Utilized mesh-flow for motion estimation.
- Proposed a novel method for fast dense motion field estimation.

Image and Video Processing

Oct. 2015 – Jul. 2016

Shape Recovery of Endoscopic Videos by Shape from Shading(SfS) using Mesh Regularization

- Presented a method to recover the inner-surface's shape of organs from endoscopic videos.
- Employed SFS for estimating a first 3D representation.
- Used a mesh least-squares regularization for constrain.

- Employed a spatial-temporal approach for smoothing of consecutive frames.

Theoretical Physics & Physical Experiments

Sep. 2014 – Jan. 2015

Signal Analysis of Sound Produced by Collision of Steel Balls

- Quantified the frequent modulation characteristic.
- Explained the source of the chirping.
- Matched with the practical case both in the wave form and the sound effect.

Publication

- **Zhihang Ren**, Peng Dai, Shuaicheng Liu, Shuyuan Zhu, Bing Zeng, "Coding Trajectory: Enable Video Coding for Video Denoising", on IEEE ICIP 2018.
- **Zhihang Ren**, Jiajia Li, Shuaicheng Liu, Bing Zeng, "MeshFlow Video Denoising", on IEEE ICIP 2017.
- **Zhihang Ren**, Tong He, Lingbing Peng, Shuaicheng Liu, Shuyuan Zhu, Bing Zeng, "Shape Recovery of Endoscopic Videos by Shape from Shading using Mesh Regularization", on ICIG 2017.
- Lei Wang, Hao Wu, Jikun Jin, **Zhihang Ren**, Hongrui Zhang, Baohua Teng, "Signal analysis of sound produced by collision of steel balls", in Physics Experimentation Vol.35 No.12, 1-4, Dec. 2015.

Teaching Experience

Statistical Learning

Sep. 2018 – Dec. 2018

Teaching Assistant

Work for Prof. Nuno Vasconcelos as TA in the Statistical Learning course, holding office hours and addressing common questions. The course has 290 students in total.

Microelectronic Systems

Mar. 2017 – Jun. 2017

Teaching Assistant

Work for Prof. Wasim Ahmad and Prof. Sajjad Hussain as TA in the Microelectronic Systems course, addressing common questions in the lectures and helping students in their lab sessions.

Introductory Programming

Sep. 2015 – Dec. 2016

Teaching Assistant

Work for Prof. Wasim Ahmad as his TA in the Introductory Programming course, addressing common questions in the lectures and helping students in their lab sessions.

Talks

- "Basics of DNNs and CNNs" Feb. 20, 2019
Machine Learning Study Group, DSP Lab, UCSD
- Invited speaker at ML Study Group, Jacobs Medical Center, UCSD

Skills

Programming Languages & Libraries : C/C++, Python, \LaTeX , OpenCV, OpenGL
Softwares : Visual Studio, MATLAB, PhotoShop, Premiere, Illustrator
Deep Learning Framework : Pytorch, TensorFlow, Keras

Hobbies

Exercise, Photography, Traveling