YUNHAO LI

No. 102, Yuhan Road, Jinan Shandong, China, 250002

Email: 15905316269@163.com, yunhaoli2020@u.northwestern.edu; Tel: 8615905316269

EDUCATION

Bachelor of Engineering: Xi'an Jiaotong University, *Shaanxi, China* 08/2015-06/2019

Major: Information Engineering, **GPA: 3.6/4.0**

Honors & Awards: The 3rd Prize Undergraduate Scholarship for 2016-2017 academic year 10/2017

2016 RoboCup China Open: Bronze Medal (3rd Place) 04/2016

Master of Science: Northwestern University, *Evanston, IL* 09/2019-03/2021

Major: Computer Engineering, **GPA: 3.9/4.0**

PUBLICATIONS

1. **A Method of Solving the SFM Scale Factor Based on Monocular Camera and a Single Laser**
   Yunhao Li, Jifa Sun, Ying Wang, Xuetao Zhang
   2017 Chinese Automation Congress (CAC)

2. **A Method of Partially Overlapping Point Clouds Registration Based on Differential Evolution Algorithm**
   Xuetao Zhang, Ben Yang, **Yunhao Li**, Xuewei Wang, Wanxu Zhang,
   PLOS ONE

3. **SkinScan: Low-Cost 3D-Scanning for Dermatologic Diagnosis and Documentation**
   Merlin Nau, Florian Schiffers, **Yunhao Li**, Bingjie Xu, …, Oliver Cossairt
   2021 IEEE International Conference on Image Processing (ICIP)

4. **A Low-Cost Solution for 3D Reconstruction of Large-Scale Specular Objects**
   Yunhao Li, Chia-Kai Yeh, Bingjie Xu, …, Oliver Cossairt
   Computational Optical Sensing and Imaging (COSI). Optical Society of America, 2021

RESEARCH EXPERIENCE

2018 UCLA Cross-disciplinary Scholars of Science and Technology (CSST) 07/2018-09/2018

*Highly Competitive Research Internship Program (~**10%** student admitted from top 20 universities in China and Japan)*

Lab: *UCLA Biomechatronics Lab in Dept. of Mechanical and Aerospace Engineering;* ***Supervisor***: *Prof. Veronica Santos*

- Developed a machine learning-based robot tactile sensor calibration algorithm.
- Analyzed human eye gaze point distribution during different subtasks.

Institute of Artificial Intelligence and Robots, Xi'an Jiaotong University 09/2016-06/2019

Supervisor: *Prof. Xuetao Zhang*

i. **National Natural Science Foundation of China Project: Key Technologies and SoCs for Imaging and Recognition of Space Targets based on Space Platforms.**

ii. **National Science and Technology Major Project: Computer Vision System for XX Space Manipulator.**

- Designed a method of Structure from Motion (SfM) method with physical scale factor retrieval using monocular camera and single laser emitter.
- Designed a point cloud registration method based on differential evolution algorithm.
- Two papers published on *2017 Chinese Automation Congress* and journal *PLOS ONE*.

Northwestern University Computational Photography Lab 09/2019-03/2021

Supervisor: *Prof. Oliver Cossairt, Prof. Marc Walton, Prof. Aggelos Katsaggelos*

i. **Large-Scale Specular Object 3D Reconstruction (Collaborate with Art Institute of Chicago)**

- Designed and built the hardware and software of a low-cost structural light 3D reconstruction system for large-scale specular objects based on Deflectometry.
- High accuracy (~0.1mm in depth, ~0.67 degree in normal) for cultural heritage preservation applications.
- Developed 3D pattern recognition algorithm based on machine learning.
- A paper accepted by *Imaging and Applied Optics 2021, OSA Technical Digest.*

ii. **Human Periocular Image Deblurring Based on Deep Network**

- Periocular image deblurring based on deep learning.
- Designed a regularizer for solving inverse problem using DCGAN model.

iii. Human Skin 3D-Scanning for Dermatologic Diagnosis (Collaborate with Northwestern Medical School)

- Designed a low-cost 3D scanning system for human skin based on 3D gradient illumination.
- A household, commercially available approach for examine and tracking skin diseases.
- A paper accepted by *2021 IEEE International Conference on Image Processing (ICIP)*

EXTRACURRICULAR ACTIVITIES

Xi'an Jiaotong University RoboCup Standard Platform League, *Captain*   09/2016-09/2017
- Developed a new computer vision algorithm for recognizing ordinary black and white soccer.

Xi'an Jiaotong University RoboCup Standard Platform League, *Member*   09/2015-09/2016
- Improved the robot to complete the complex tasks such as walking, and manipulation.

PROFESSIONAL SKILLS

Coding Skills:
- Excellent skills on C/C++, Python, Matlab, Assembly.

Computer Vision and Machine Learning:
- Excellent skills on OpenCV, Matlab (Computer Vision and Deep Learning Toolbox), Linux and Pytorch.
- Related Courses: Introduction to Computer Vision (A), Introduction to Computational Photography (A), Machine Learning (A), Machine Learning: Foundation, Algorithms and Applications (A).

Robotics:
- Expert on developing and programming on humanoid robot platforms, with **bronze medal** from **RoboCup China Open** (using NAO robots).
- Rich experience on developing computer vision system for space platforms.
- Rich experience on haptics and manipulation.