Zhong Li

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Research Interests

Vision and Graphics related field. 3D Non-rigid Dynamic Human Shape Reconstruction, Free-viewpoint and 3D Video, Dynamic Mesh Sequences Compression.

Education

University of Delaware, Newark, Delaware

Ph.D, Computer Science, *Expected:* Fall 2018

- Advisors: Jingyi Yu, Ph.D

University of Missouri, Columbia, Missouri

M.S, Computer Science, Aug 2015

- Master Thesis: *3D Face Reconstruction Via Consumer Depth Camera*
- Advisor: Ye Duan, Ph.D

Publications

1. **Zhong Li**, Jinwei Ye, Yu Ji, Hao Sheng, Jingyi Yu. "3D Fluid Flow Reconstruction Using Light Field PIV". *In submission*, 2019.
2. **Zhong Li**, Xin Chen, WangYiteng Zhou, Yingliang Zhang, Jingyi Yu. "Pose2Body: Pose-Guided Human Parts Segmentation." *accepted by IEEE Conference on on Multimedia and Expo* **(ICME)**, 2019.**Oral presentation**
3. **Zhong Li**, Minye Wu, WangYiteng Zhou, Jingyi Yu. "4D Human Body Correspondences from Panoramic Depth Maps." *accepted by IEEE Conference on Computer Vision and Pattern Recognition* **(CVPR)**, 2018.
4. **Zhong Li**, Yu Ji, Wei Yang, Jinwei Ye, Jingyi Yu. "Robust 3D Human Motion Reconstruction Via Dynamic Template Construction." *accepted by International Conference on 3D Vision* **(3DV)**, 2017. **Spotlight Oral presentation**
5. Yingliang Zhang, **Zhong Li**, Wei Yang, Peihong Yu, Haiting Lin, Jingyi Yu. "The Light Field 3D Scanner." *accepted by IEEE International Conference on Computational Photography* **(ICCP)**, 2017. **Oral presentation**

Academic Experience

Graphics & Imaging Laboratory, *University of Delaware, Newark, USA*
Research Assistant **Sep 2015 - Present**
Working on several projects related to 3D Computer Vision and Graphics

- **3D Human Body Non-Rigid Reconstruction**
  In multi-view human body capture systems, the recovered 3D geometry or even the acquired imagery data can be heavily corrupted due to occlusions, noise, limited field-of-view, etc. We present a graph-based non-rigid shape registration framework that can simultaneously recover 3D human body geometry and estimate pose/motion at high fidelity.
- **4D Dynamic Human Mesh Compression**
  The availability of affordable 3D full body reconstruction systems has given rise to free-viewpoint video (FVV) of human shapes. Most existing solutions produce temporally uncorrelated point clouds or meshes with unknown vertex correspondences. Individually compressing each frame is ineffective and still yields to ultra-large data sizes. We present an end-to-end deep learning scheme to establish dense shape correspondences and subsequently compress the data.

- **Human Body Semantic Segmentation.**
  We developed a novel technique that we call Pose2Body that robustly conducts human parts segmentation based on the pose estimation results. We partition an image into superpixels and set out to assign a segment label to each superpixel most consistent with the pose. We design special feature vectors for every superpixel-label assignment as well as superpixel-superpixel pairs and model optimal labeling as to solve for a conditional random field (CRF).
- **Light Field 3D Scanner**
  We present a novel light field structure-from-motion (SfM) framework for reliable 3D object reconstruction. Specifically, we use the light field (LF) camera such as Lytro and Raytrix as a virtual 3D scanner.

***CG & Image Understanding Lab**,University of Missouri, Columbia, USA*
Completed the Master Thesis **Feb 2013 - June 2015**

- **3D Face Reconstruction and Tracking Using SIFT Iterative Closest Points By Consumer Depth Camera**
  Develop an automatic 3D face reconstruction and pose estimation framework using consumer depth camera

Industrial Experience

***Plex-VR Inc**, Santa Clara, CA, USA*
Graphics & Vision Research Intern **Feb 2017 - Aug 2017**

- Develop an algorithm combine Poisson Reconstruction and Visual Hull to improve multiple-view stereo reconstruction.
- Participate to build a multi-camera dome for dynamic object capturing for AR/VR Applications. The applied algorithms including Camera Calibration, Structure from Motion, Multiple-View Stereo Reconstruction.

US Patent

- Dynamic Local Temporal-Consistent Textured Mesh Compression, Application Number 15/898,127, Filed in Feb,2018

Teaching Experience

- 15 fall: CISC 106 GEN COMPUTER SCIEN FOR ENGNR
- 16 spring: CISC 220 DATA STRUCTURE

Expertise

Computer Graphics, 3D Computer Vision, 3D Reconstruction, Deep Learning,Computational Photography, Image Processing,

Honors and Awards

Professional Development Award, University of Delaware, 2018
Best Poster Award, SSIST(ShanghaiTech Symposium on Information Science and Technology)
Excellent Undergraduate Thesis Award, Hunan University of Sci and Tech, 2012

Technical Skills

- Programming Languages: C/C++, Matlab, Python, PHP, Mysql.
- Applications: OpenCV, OpenGL, EIGEN, VCG library, CGAL, LATEX, Autodesk 3Ds Max, Autodesk Maya, Pytorch, Agisoft, Paraview.
- Operating Systems: Unix/Linux, Windows.