

# Tianyu Luan

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## Profile

Tianyu Luan is a 3rd-year Ph.D. candidate at the [State University of New York at Buffalo](#), Buffalo NY, United States, advised by [Prof. Junsong Yuan](#). He received a B.S. degree in Applied Physics at [University of Science and Technology of China](#), Hefei Anhui, China in 2013, and M.Eng. degree in Electrical and Telecommunication Engineering at [Tsinghua University](#), Beijing, China in 2017. His research interest lies on 3D human perception prior & 3D generation.

## Education

- 2021-pres.** **State University of New York at Buffalo**, Buffalo, NY, United States  
Ph.D. candidate (3rd year), Computer Science.  
Research topic: 3D human perception prior.
- 2014-2017** **Tsinghua University**, Beijing, China  
M.Eng., Electronic Engineering.  
Research topic: Visual Light Communication.
- 2009-2013** **University of Science and Technology of China**, Hefei, China  
B.S., Applied Physics.

## Experiences

- Feb 2024 - present** **United Imaging Intelligence**, Burlington, MA, United States  
*Research Intern. Worked with [Dr. Zhongpai Gao](#) and [Dr. Ziyang Wu](#).*  
3D human hand reconstruction & generation.
- May 2023 - Aug 2023** **United Imaging Intelligence**, Cambridge, MA, United States  
*Research Intern. Worked with [Dr. Zhongpai Gao](#) and [Dr. Ziyang Wu](#).*  
3D human body reconstruction.
- May 2022 - Aug 2022** **OPPO Research**, Palo Alto, CA, United States  
*Research Intern. Worked with [Dr. Zhong Li](#) and [Dr. Yi Xu](#).*  
3D hand reconstruction & mesh detailed evaluation.
- Jul 2019 - Jun 2021** **Chinese Academy of Science**, Shenzhen, Guangdong, China  
*Research Assistant. Worked with [Prof. Yali Wang](#) and [Prof. Yu Qiao](#).*  
3D human body reconstruction & pose estimation.
- Jun 2017 - Apr 2019** **HUAWEI Technology Co. Ltd.**, Shenzhen, Guangdong, China  
*Multimedia Algorithm Engineer.*  
3D human face/object reconstruction R&D.

## Selected Works

- **Human perception aligned 3D shape metric.**
  - A spectrum-based 3D metric used on mesh shape comparison.
  - Analytic design and much closer to human perception than previous metrics.
  - Part connection module when multiple parts are visible in one image.
  - The work has been accepted by CVPR2024.
- **3D hand reconstruction with shape details.**
  - Reconstruction of high-fidelity hand mesh from monocular RGB inputs.
  - Using Mesh frequency decomposition to recover high-frequency details.
  - Generating high-fidelity hands in a coarse-to-fine manner.
  - The work has been published by CVPR2023.
- **Human body part reconstruction.**
  - A framework that independently reconstructs the mesh of each body part.
  - Input: monocular image with only a few body parts visible.
  - Part connection module when multiple parts are visible in one image.
  - The work has been submitted to ECCV2024.
- **Pose calibrated 3D human mesh reconstruction.**
  - A kinematic-based light-weighted framework to calibrate human body mesh using human pose.
  - 2 framework designs to leverage mesh accuracy and computational costs
  - The pose estimator and body mesh generator are designed in a plug-in manner.
  - The work is published in AAAI2021 Main Track.
- **RGB-D sequence based human face reconstruction.**
  - Reconstruction of human face mesh from depth video using ICP and TSDF.
  - Texture map generated from a selected frame set in color video using graph-cut
  - The demo is shown in the HONOR V20 release event.

## Selected Publications

- [1]. **Tianyu Luan**, *et al.* "Spectrum AUC Difference (SAUCD): Human-aligned 3D Shape Evaluation." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2024.
- [2]. Xianzu Wu, Xianfeng Wu, **Tianyu Luan**, *et al.* "FSC: Few-point Shape Completion." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2024.
- [3]. Yuanhao Zhai, **Tianyu Luan**, *et al.* "Towards Generic Image Manipulation Detection with Weakly-Supervised Self-Consistency Learning" *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023. [[Paper](#)][[Code](#)]
- [4]. **Tianyu Luan**, *et al.* "High Fidelity 3D Hand Shape Reconstruction via Scalable Graph Frequency Decomposition." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. 2023. [[Paper](#)][[Code](#)]
- [5]. **Tianyu Luan**, *et al.* "PC-hmr: Pose calibration for 3d human mesh recovery from 2d images/videos." *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. 2021. [[Paper](#)]

## Teaching

- 21 Fall, Teaching Assistant, Computer Vision and Image Processing (CSE 573), University at Buffalo.
- 22 Spring, Teaching Assistant, Computer Vision and Image Processing (CSE 573), University at Buffalo.
- 22 Fall, Teaching Assistant, Computer Vision and Image Processing (CSE 573), University at Buffalo.

## Service

- Reviewer of CVPR'23'24, ICCV'23, ECCV'24, ACM MM'24, MICCAI'24.