



# XU Lan

5th-year PhD Candidate

Robotics Institute, ECE, Hong Kong University of Science and Technology

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## RESEARCH INTERESTS

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My goal is to enable **convenient** and **immersive** performance capture and remote telepresence in our daily life!

- Dynamic scene reconstruction
- Human performance capture
- Machine learning for vision / graphics
- Static scene understanding
- Virtual and augmented reality
- 3D modeling and aerial robot

## EDUCATION

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| 10/2018 - 09/2019 | Visiting PhD student, GVV Group, <b>Max-Planck-Institute for Informatics</b><br>Advisor: Professor Christian Theobalt                        |
| 10/2016 - present | Visiting PhD student, School of Automation, <b>Tsinghua University</b><br>Advisor: Professor Yebin Liu                                       |
| 09/2015 - present | PhD candidate in Robotics Institute, <b>HKUST / Tsinghua-Berkeley Shenzhen Institute</b><br>Advisor: Professor Zexiang Li; Professor Lu Fang |
| 09/2011 - 06/2015 | B.Eng. in Signal and Communication Engineering,<br>School of Information and Electronic Engineering, <b>Zhejiang University</b>              |

## JOURNAL PUBLICATIONS

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1. [Lan Xu](#), Zhuo Su, Lei Han, Tao Yu, Yebin Liu, Lu Fang, “UnstructuredFusion: Realtime 4D Geometry and Texture Reconstruction using Commercial RGBD Cameras”, *IEEE TPAMI*, 2019.
2. Siyuan Gu, Lei Han, [Lan Xu](#), Lu Fang, “Real-time Globally Consistent Dense 3D Reconstruction with Online Texturing”, under major revision of *IEEE TPAMI*, 2019.
3. [Lan Xu](#), Wei Cheng, Kaiwen Guo, Lei Han, Yebin Liu, Lu Fang, “FlyFusion: Realtime Dynamic Scene Reconstruction Using a Flying Depth Camera”, *IEEE TVCG*, 2019.
4. Lei Han, Tian Zheng, Yinheng Zhu, [Lan Xu](#), Lu Fang, “Realtime Semantic 3D Perception for Immersive Augmented Reality”, conditional accepted of *Proc. of IEEE VR & IEEE TVCG*, 2019.
5. [Lan Xu](#), Yebin Liu, Wei Cheng, Kaiwen Guo, Guyue Zhou, Qionghai Dai, Lu Fang, “FlyCap: Markerless Motion Capture Using Multiple Autonomous Flying Cameras”, *IEEE TVCG*, 2018.
6. Lei Han, [Lan XU](#), Dmytro Bobkov, Eckehard Steinbach, Lu Fang, “Fast Bundle Adjustment for Globally Consistent SLAM”, *IEEE Transactions on Robotics (TRO)*, 2018.

## CONFERENCE PUBLICATIONS

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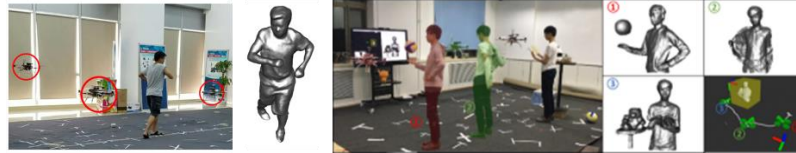
1. [Lan Xu](#), Weipeng Xu, Vladislav Golyanik, Marc Habermann, Lu Fang, Christian Theobalt, “EventCap: Monocular 3D Capture of High-Speed Human Motions using an Event Camera”, submitted to *XXXX2020*.
2. Lei Han, Tian Zheng, [Lan Xu](#), Lu Fang, “OccuSeg: Occupancy aware 3D Instance Segmentation”, submitted to *XXXX2020*, (**First Place** for 3D Instance Segmentation on Scannet and S3DIS dataset).

3. Wei Cheng\*, Lan Xu\*, Lei Han, Yuanfang Guo, Lu Fang, “iHuman3D: Intelligent Human Body 3D Reconstruction using a Single Flying Camera”, *Proc. of ACM MM*, 2018. **Oral**
4. Lei Han, Guyue Zhou, Lan Xu, Lu Fang, “Beyond SIFT using binary features in loop closure detection”, *Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017. **Oral**

## RESEARCH PROJECTS

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06/2016 - 12/2018 **Dynamic Scene Reconstruction using flying cameras**



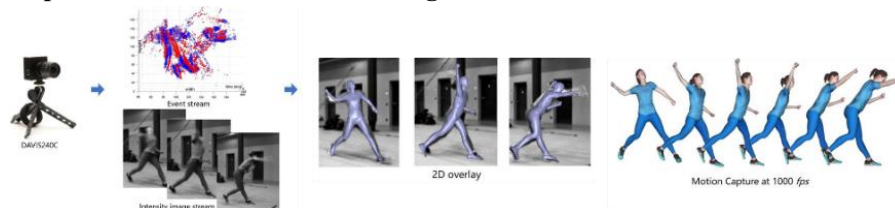
- Autonomous flying camera arrays with active view planning
- Joint non-rigid MoCap and global camera tracking
- Robust reconstruction for topology changes

05/2018 - 01/2019 **Real-time Volumetric Capture using Sparse and Unstructured Kinects**



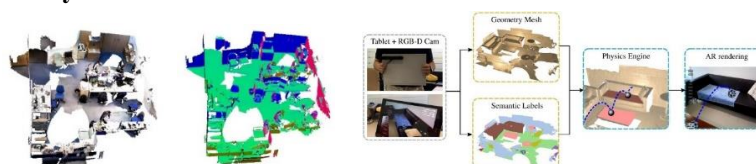
- Real-time capture and streaming system
- Autonomous online calibration and nonrigid tracking
- Real-time dynamic atlas texturing

10/2018 - 08/2019 **Capture Fast Human Motions using an Event Camera**



- Monocular and event camera-based 3D human motion capture
- Hybrid asynchronous optimization and refinement
- Fast human motion capture results at 1000 fps

10/2016 - 09/2019 **Globally Consistent Indoor Scene Reconstruction and Understanding**



- Efficient/Large-scale/Globally-consistent camera localization
- Real-time dense 3D reconstruction on portable devices
- Real-time semantic understanding on portable devices

## RESEARCH STATEMENT

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1. Robust and convenient 3D avatar generation using a single consumer-level RGB or RGBD sensor
2. Light-weight multi-view performance capture to enable VR/AR immersive telepresence
3. Jointly dynamic & static scene reconstruction for AR immersive remote communication

## PERSONAL SKILLS

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LaTeX, C&C++ programming, CUDA C and PTX, MATLAB, Python, OpenGL, Direct3D, ROS, Adobe Photoshop, Adobe Premiere.

## WORKING EXPERIENCES

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07/2014 - 07/2015      Camera design, drone-based human tracking,  
Intern at Dept. of Camera/Computer Vision r & d, DJI technology, Shenzhen, China

## INDUSTRY COOPERATION

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**Orbbec**, Real-time Dynamic Scene Reconstruction Technique (Technology Licensing)

**Visbodyfit**, Real-time Dynamic Scene Reconstruction Technique (Technology Licensing)

**Apple**, Real-time 3D Semantic Understanding Technique (Horizontal Project)

## REFERENCES

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**Lu Fang, Associate Professor**

Tsinghua University, Graduate School at Shenzhen, 518057, China. [fanglu@sz.tsinghua.edu.cn](mailto:fanglu@sz.tsinghua.edu.cn).

**Yebin Liu, Associate Professor**

Tsinghua University, Beijing, 100085, China. [liuyebin@mail.tsinghua.edu.cn](mailto:liuyebin@mail.tsinghua.edu.cn)

**Christian Theobalt, Professor**

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