

## RESEARCH INTERESTS

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Graph Neural Network for Vector Graphics and 3D Data & 3D Reconstruction & Low-level Computer Vision & Medical Image Processing.

## RECENT PROJECTS

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**CAD(Computer-Aided Design) Drawing Perception** Oct. 2020 - Apr. 2021  
[Project Page](#) & [Product Page](#)

We release the first large-scale real-world dataset of over 10,000 CAD drawings with line-grained annotations, covering various types of builds. We also introduce the task of **panoptic symbol spotting**, which is a relaxation of the traditional symbol spotting problem.

By proposing a CNN-GCN method, we build an unified baseline network for the panoptic symbol spotting task. This work can be used integrated in CAD layer analytics in architecture, engineering and construction (AEC) industries to accelerate the efficiency of 3D modeling.

**Efficient Multi-view Stereo and Stereo Matching** Jul. 2019 - Dec. 2019

We propose a memory and time efficient cost volume formulation which is built upon a standard feature pyramid encoding geometry and context at gradually finer scales. We further narrow the depth (or disparity) range of each stage by the depth (or disparity) map from the previous stage to recover the output in a coarser to fine manner.

We apply the cascade cost volume to the representative MVS-Net, and obtain a 23.1% improvement on DTU benchmark (**1st place**), with **50.6%** and **74.2%** reduction in GPU memory and run-time. It is also the state-of-the-art learning-based method on Tanks and Temples benchmark.

## SELECTED PUBLICATIONS

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**3DV 2021** [\[link\]](#): Rakesh Shrestha, **Zhiwen Fan**, Qingkun Su, Zuozhuo Dai, Siyu Zhu, Ping Tan, “MeshMVS: Multi-View Stereo Guided Mesh Reconstruction”, International Conference on 3D Vision.

**ICCV 2021** [\[link\]](#): **Zhiwen Fan**<sup>\*1</sup>, Lingjie Zhu\*, Honghua Li, Xiaohao Chen, Siyu Zhu, Ping Tan, “FloorPlanCAD: A Large-Scale CAD Drawing Dataset for Panoptic Symbol Spotting”, The International Conference on Computer Vision.

**CVPR 2020 (Oral)** [\[link\]](#): Xiaodong Gu\*, **Zhiwen Fan**\*, Siyu Zhu, Zuozhuo Dai, Feitong Tan, Ping Tan “Cascade Cost Volume for High-Resolution Multi-View Stereo and Stereo Matching”, Conference on Computer Vision and Pattern Recognition.

**IPMI 2019** [\[link\]](#): Liyan Sun\*, **Zhiwen Fan**\*, Xinghao Ding, Yue Huang, John Paisley “Joint CS-MRI reconstruction and segmentation with a unified deep network”, Information Processing in Medical Imaging.

**ACM MM 2019** [\[link\]](#): **Zhiwen Fan**\*, Huafeng Wu\*, Xueyang Fu, Yue Huang, Xinghao Ding “Residual-guide network for single image deraining”, ACM Multimedia.

**ECCV 2018** [\[link\]](#): **Zhiwen Fan**\*, Liyan Sun\*, Xinghao Ding, Yue Huang, Congbo Cai, John Paisley, “A Segmentation-aware Deep Fusion Network for Compressed Sensing MRI”, European Conference on Computer Vision.

**AAAI 2018** [\[link\]](#): Liyan Sun\*, **Zhiwen Fan**\*, Yue Huang, Xinghao Ding, John Paisley “Compressed Sensing MRI Using a Recursive Dilated Network”, Association for the Advancement of Artificial Intelligence.

**TIP 2019** [\[link\]](#): Liyan Sun\*, **Zhiwen Fan**\*, Xueyang Fu, Yue Huang, Xinghao Ding, John Paisley, “A deep information sharing network for multi-contrast compressed sensing MRI reconstruction”, Transactions on Image Processing.

**MRI 2019** [\[link\]](#): Liyan Sun, **Zhiwen Fan**\*, Xinghao Ding, Yue Huang, John Paisley, “Region-of-interest undersampled MRI reconstruction: A deep convolutional neural network approach”, Magnetic resonance imaging.

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<sup>1</sup>A marker \* denotes equal-contribution first authorship.

MRI 2019 [\[link\]](#): Liyan Sun, **Zhiwen Fan**, Xinghao Ding, Congbo Cai, Yue Huang, John Paisley “A divide-and-conquer approach to compressed sensing MRI”, Magnetic resonance imaging.

## PROFESSIONAL EXPERIENCE

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**The University of Texas at Austin** Aug. 2021 - Present  
Research Assistant, Supervisor: [Zhangyang \(Atlas\) Wang](#)

**Alibaba Cloud** Jul. 2019 - Aug. 2021  
Senior Algorithm Engineer, Supervisor: [Prof. Ping Tan](#), [Dr. Siyu Zhu](#)

**Microsoft Research Asia** Jun. 2018 - Aug. 2018  
Research Intern, Supervisor: [Dr. Xun Guo](#)

**Xiamen University** Aug. 2016 - Jun. 2019  
Research Assistant, Supervisor: [Prof. Xinghao Ding](#)

## EDUCATION

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**The University of Texas at Austin (UT Austin)** Aug. 2021 - Present  
Ph.D. Student, Electrical and Computer Engineering Advisor: Prof. [Zhangyang \(Atlas\) Wang](#)

**Xiamen University (XMU)** Sep. 2016 - Jun. 2019  
Master, Electronic and Communication Engineering Advisor: Prof. [Xinghao Ding](#)

**Shandong Agriculture University (SDAU)** Sep. 2012 - Jun. 2016  
Bachelor, Electronic Information Science and Technology

## HONORS

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### Scholarship & Travel Awards

- Outstanding Graduates of Xiamen University Jun. 2019
- The First Prize Scholarship of Xiamen University 2016-2018
- AAAI 2018 Travel Award Jan. 2018
- Outstanding Graduates of Shandong Province Jun. 2016

## SERVICES

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**Journal Reviewer:** IJCV, Neurocomputing

**Conference Reviewer:** CVPR'22, ICCV'21, AAAI'21, ICME'19