

SUMMARY

My research focuses on machine learning, vision, and graphics. Solid experience in multi-view stereo, 3D shape reconstruction, pose estimation, 3D geometry processing, and rendering.

EDUCATION

Hong Kong University of Science and Technology (HKUST), Hong Kong 2013 – 2019
Ph.D. in Electronic and Computer Engineering

Tongji University, Shanghai, China 2009 – 2013
B.E. in Electrical and Electronics Engineering

RELATED EXPERIENCE

UCSD, San Diego, CA Mar 2020 – Present

Postdoctoral Researcher. Advisor: [Prof. Hao Su](#)

Generalizable Single Image Shape Reconstruction

- Proposed compositional generalizability concept in single image 3D shape reconstruction.
- Designed a factorized system with strong transferability to unseen categories.
- Designed a one-stage transformer network to predict 3D shape along with part segmentation.

Multi-view Stereo

- Designed an adaptive and iterative point-based neural network with memory efficiency and flexibility.
- Developed a scene converter from 3ds Max to Blender, supporting various material and lighting.

Robotic Grasping and Manipulation

- Implemented neural networks of RGB-D based object 6D pose estimation and object segmentation.

DMAI, Inc., Guangzhou, China Oct 2019 – Feb 2020

Computer Vision Research Engineer

- Implemented human pose estimation, pose tracking and human digitalization.

SenseTime, Hong Kong Jun 2017 – Dec 2017

Research Intern

Portrait Relighting

- Simulated digital human relighting in Maya. Implemented neural networks for image style transfer.

HKUST, Hong Kong Aug 2016 – Jun 2019

Efficient Rendering (C++, OpenGL)

- Designed a reprojection algorithm to render low-resolution model with high-resolution appearance.
- Designed a clustering algorithm of directed acyclic graphs to recover back-to-front triangle ordering.
- Designed a triangle ordering algorithm for animated models, 20% faster in rendering speed than SOTA.

PUBLICATIONS

ICCV 2021 (**Oral**). *Learning with Noisy Labels for Robust Point Cloud Segmentation*.

Shuquan Ye, Dongdong Chen, **Songfang Han**, Jing Liao.

ICCV 2021. *M3D-VTON: A Monocular-to-3D Virtual Try-On Network*.

Fuwei Zhao, Zhenyu Xie, Michael Kampffmeyer, Haoye Dong, **Songfang Han**, Tao Zhang, Xiaodan Liang.

arXiv 2021. *Compositionally Generalizable 3D Structure Prediction*.

Songfang Han, Jiayuan Gu, Kaichun Mo, Li Yi, Siyu Hu, Xuejin Chen, Hao Su.

TVCG 2021. *Meta-PU: An Arbitrary-Scale Upsampling Network for Point Cloud*.

Shuquan Ye, Dongdong Chen, **Songfang Han**, Ziyu Wan, Jing Liao.

PAMI 2020. *Visibility-aware point-based multi-view stereo network.*

Rui Chen, **Songfang Han**, Jing Xu.

ICCV 2019 (**Oral**). *Point-based multi-view stereo network.*

Songfang Han*, Rui Chen*, Jing Xu, Hao Su. (* equal contribution)

PACM CGIT 2018. *In-depth buffers.*

Songfang Han, Ge Chen, Pedro V. Sander, Diego Nehab.

JCGT 2017. *Triangle reordering for efficient rendering in complex scenes.*

Songfang Han, Pedro V. Sander.

I3D 2016. *Triangle reordering for reduced overdraw in animated scenes.*

Songfang Han, Pedro V. Sander.

COMPUTER SKILLS

Programming: Python, C++, JavaScript, CUDA, MATLAB

Deep Learning: Pytorch, Tensorflow

Graphics: Blender, OpenGL, WebGL, 3ds Max, Maya