JIAPENG TANG

No.381 Wushan Road, Tianhe District, Guangzhou, P.R.China
(+86)13246818872 ⋄ tangjiapengtjp@gmail.com

EDUCATION

South China University of Technology *Sept. 2014 - June. 2018*
Bachelor of Engineering, Information Engineering (Elite Class) GPA: 3.84/4 Ranking: 6/61

South China University of Technology *Sept. 2018 - June. 2021*
Master of Signal and Information Processing Supervisor: Prof. Kui Jia

The Hong Kong University of Science and Technology *Sept. 2021- June. 2025 (Expected)*
PhD in Computer Science and Engineering Supervisor: Prof. Dan Xu

RESEARCH INTERESTS

3D Model Acquisition: 3D Object Reconstruction and Completion, Neural Implicit Field, 3D/4D Human Reconstruction.

3D Scene Understanding and Reconstruction: Depth Estimation, Multi View Stereo, SLAM, Real-time 3D Reconstruction, 3D Detection and Segmentation.

3D Aware Image Synthesis: Novel View Synthesis, Neural Radiance Field

EXPERIENCE

The Chinese University of Hong Kong, Shenzhen *July. 2018 - Sep. 2018*
Summer Research Intern, Supervised by **Prof. Xiaoguang Han**
Focus on the topology-aware object mesh generation.

South China University of Technology *Nov. 2017 - Present*
Research Assistant & Master Student, Supervised by **Prof. Kui Jia**
Focus on 3D object reconstruction from RGB images or point clouds, neural implicit field, and neural radiance field.

DAMO Academy, Alibaba Group *Jun. 2020 - Present*
Research Intern, Supervised by **Prof. Lei Zhang**
Focus on efficient and robust 4D human reconstruction and surface reconstruction from un-oriented point clouds.

PUBLICATIONS

- **J. Tang**, X. Han, J. Pan K. Jia and X. Tong. A Skeleton-bridged Deep Learning Approach for Generating Meshes of Complex Topologies from Single RGB Images. The IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019, **Oral presentation, Best paper final lists, %0.8.**
  - Existing works cannot well reconstruct those surfaces of complex topologies. To this end, we introduce the skeleton to represent topological structures, and propose in this paper a skeleton-bridged, stage-wise learning approach to address the challenge. We use different shape representations of point cloud, volume, and mesh in our stage-wise learning, in order to take their respective advantages. To learn skeleton from an input image, we design a deep architecture whose decoder is based on a novel design of parallel streams respectively for the synthesis of curve- and surface-like skeleton points.

- J. Pan, X. Han, W. Chen, **J. Tang** and K. Jia. Deep Mesh Reconstruction from Single RGB Images via Topology Modification Networks, International Conference on Computer Vision (**ICCV**), 2019.
- **J. Tang**, D. Xu, K. Jia, and L. Zhang. Learning Parallel Dense Correspondence from Spatio-Temporal Descriptors for Efficient and Robust 4D Reconstruction. The IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.
  - In this work, we present a novel pipeline to learn a temporal evolution of the 3D human shape through spatially continuous transformation functions among cross-frame occupancy fields. The key idea is to parallelly establish the dense correspondence between predicted occupancy fields at different time steps via explicitly learning continuous displacement vector fields from robust spatio-temporal shape representations.
- **J. Tang**, X. Han, M. Tan, X. Tong and K. Jia. SkeletonNet: A Topology-Preserving Solution for Learning Mesh Reconstruction of Object Surfaces from RGB Images, IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2021. **Accepted on May 26th, 2021.**
  - In this journal paper, we aim for a systematic study on the usefulness of skeletal shape representations on the mesh recovery of object surfaces. To this end, we propose the end-to-end, trainable model of SkeletonNet for learning to produce skeletal shape representations. We further design models that use skeletons in the state-of-the-art frameworks of both explicit and implicit mesh recoveries from RGB images.
- **J. Tang**, J. Lei, D. Xu, F. Ma, K. Jia, and L. Zhang. Sign-Agnostic CONet: Learning Implicit Surface Reconstructions by Sign-Agnostic Optimization of Convolutional Occupancy Networks, International Conference on Computer Vision **(ICCV)**, 2021, **Under Review, arXiv preprint**.
  - Recent state-of-the-arts typically require accurate normals to avoid the sign conflict problem in overlapping regions of local fields, which severely limits their applicability to raw scans without oriented surface normals. In this work, we propose to learn implicit surface reconstruction by sign-agnostic optimization of convolutional occupancy networks, to simultaneously achieve advanced scalability, generality, and applicability in a unified framework. We achieve this goal by a simple yet effective design, which optimizes the occupancy fields that are conditioned on convolutional features from an hourglass network architecture with an unsigned binary cross-entropy loss.

AWARDS

South China University of Technology Scholarship *2015-2020*

Merit Student of South China University of Technology *2015-2017*

SKILLS AND INTERESTS

Language: Native in Chinese (Mandarin), Fluent in English (IELTS 6.5)

Programming Language: Python, C/C++, Cuda, Matlab, LaTeX

Deep Learning Platform: PyTorch, TensorFlow

Sports: Basketball, Table tennis, Running, and Swimming.

OTHERS

For more information, please visit my website at: https://tangjiapeng.github.io.