

# RAN YI

Department of Computer Science and Technology, Tsinghua University  
(+86) 135-2276-3827 ♦ yr16@mails.tsinghua.edu.cn

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## EDUCATION

<b>Tsinghua University</b> Ph.D. candidate in Computer Science and Technology Research Interests: Computer vision and computational geometry	Beijing, China	09/2016 – Present
<b>Tsinghua University</b> B.E. in Electronic Information Science and Technology Ranking: 5/237      Average Score: 94/100	Beijing, China	09/2012 – 07/2016
<b>The University of Melbourne</b> Exchange Program (Undergraduate)	Melbourne, Australia	03/2015 – 06/2015

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## PROJECT EXPERIENCE

### I. Computer vision and machine learning

#### **Artistic Portrait Drawing Generation from Face Photos (CVPR 2019, 2020) 07/2018–11/2019**

- Proposed a novel GAN based model that builds upon hierarchical generators and discriminators and a novel DT loss to promote line-stroke based style.
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- Conducted experiments on a newly constructed APDrawing Dataset, our proposed method outperforms state-of-the-art in qualitative evaluation and human perceptual study.

#### **Talking Face Video Generation from Audio (Submitted to TVCG) 08/2019–11/2019**

- Proposed a novel framework that produces high-quality realistic talking face video with head movements.
- Conducted experiments on LRW dataset, our method achieves better results than state-of-the-art methods with natural head movements.

#### **An Adaptive Filter for Deep Learning Networks on Large-Scale Point Cloud (ICIP 2019) 11/2018–02/2019**

- Proposed an efficient filter to filter large-scale point cloud into representative points to lower computational cost of current networks for point cloud analysis.
- Conducted experiments on PointNet and PointNet++, our filter greatly lowers computational cost and improves accuracy on ScanNet dataset.

#### **Feature-Aware Content-Sensitive Supervoxel Segmentation (TPAMI) 12/2018–03/2019**

- Proposed a Feature-aware CSS algorithm that has explicit control of generating points positions and outputs a segmentation whose cell boundaries well align with local video boundaries.
- Conducted experiments on four datasets and two applications to show Feature-aware CSS outperforms existing methods.

#### **Content-Sensitive Supervoxel Segmentation (CVPR 2018, ICCV 2019) 07/2017–11/2017, 09/2018–12/2018**

- Proposed a supervoxel algorithm based on video manifold tessellation and proved to have approximation guarantees.
- Conducted experiments on four datasets to show the proposed method outperforms existing methods.

#### **Machine Reading Comprehension 05/2017–06/2017**

- Proposed a seven-layer SSAE model based on Bi-LSTM, attention flow and syntactic dependency tree.
- Conducted experiments on SQuAD dataset and showed SSAE ranks 5<sup>th</sup> on leaderboard (June 2017).

### II. Computational geometry and computer graphics

#### **Constructing Delaunay Mesh with Lower Dirichlet Energy (CIS) 07/2018–10/2018**

- Proposed a construction method of a special Delaunay Mesh, whose Dirichlet energy is guaranteed to be smaller than intrinsic Delaunay triangulation.
- Applied the proposed method to texture mapping and showed our method achieves better texture mapping with fewer visual artifacts than IDT and DM.

#### **Optimal Delaunay Mesh Simplification (SIGGRAPH Asia 2018)**

**03/2018–06/2018**

- Proposed a novel differential-evolution-based model to compute a low-cost path in the Delaunay Mesh simplification solution space, which leads to high-quality Delaunay Mesh.
- Conducted experiments on a large number of models and our method consistently outperforms the existing methods in terms of approximation error, and achieves much better results on CAD models with sharp features.

#### **Globally Optimal Geodesic Centroidal Voronoi Tessellations (SIGGRAPH Asia 2016)**

**11/2015–05/2016**

- Proposed a Manifold DE algorithm which extends differential evolution framework to manifold domains and achieves global optimum.
- Conducted experiments on a wide range of 3D models to show MDE outperforms existing methods.

### **III. Robotic planning and applications**

#### **Delta DLP 3D Printing with Large Size (TASE, IROS 2016)**

**01/2016–11/2016**

- Proposed a system to enable large object DLP 3D printing by horizontal movement of platform.
- Proposed an algorithm for object partition and path planning for more efficient printing.
- Conducted experiments and showed models fabricated by our system have similar stiffness as models printed by traditional DLP 3D printer.

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## **PUBLICATIONS**

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- [1] **Ran Yi**, Yong-Jin Liu, Yu-Kun Lai, Paul L. Rosin. **Unpaired Portrait Drawing Generation via Asymmetric Cycle Mapping**. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2020**), accepted, 2020.
- [2] **Ran Yi**, Zipeng Ye, Wang Zhao, Minjing Yu, Yu-Kun Lai, Yong-Jin Liu. **Feature-Aware Uniform Tessellations on Video Manifold for Content-Sensitive Supervoxels**. IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), accepted, 2020.
- [3] **Ran Yi**, Zipeng Ye, Juyong Zhang, Hujun Bao, Yong-Jin Liu. **Audio-driven Talking Face Video Generation with Learning-based Personalized Head Pose**. CoRR, vol. abs/2002.10137, 2020.
- [4] **Ran Yi**, Yong-Jin Liu, Yu-Kun Lai, Paul L. Rosin. **APDrawingGAN: Generating Artistic Portrait Drawings from Face Photos with Hierarchical GANs**. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2019**), pages 10743-10752, 2019. Oral paper.
- [5] Zipeng Ye\*, **Ran Yi\***, Minjing Yu, Yong-Jin Liu, Ying He. Fast Computation of Content-Sensitive Superpixels and Supervoxels using q-distances. IEEE Conference on Computer Vision (**ICCV 2019**), pages 3770-3779, 2019.
- [6] Wang Zhao\*, **Ran Yi\***, Yong-Jin Liu. An Adaptive Filter for Deep Learning Networks on Large-Scale Point Cloud. IEEE International Conference on Image Processing (ICIP 2019), pages 1620-1624, 2019.
- [7] Wenyong Gong, **Ran Yi**, Yong-Jin Liu, Ying He. Constructing Delaunay Mesh with Lower Dirichlet Energy than Intrinsic Delaunay Triangulation. Communications in Information and Systems (CIS), Vol. 3, 2019.
- [8] **Ran Yi**, Yong-Jin Liu, Ying He. **Delaunay Mesh Simplification with Differential Evolution**. ACM Transactions on Graphics (**SIGGRAPH ASIA 2018**), Vol. 37, No. 6, Article No. 263, 2018.
- [9] **Ran Yi**, Yong-Jin Liu, Yu-Kun Lai. **Content-Sensitive Supervoxels via Uniform Tessellations on Video Manifolds**. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2018**), pages 645-655, 2018.
- [10] **Ran Yi\***, Chenming Wu\*, Yong-Jin Liu, Ying He, Charlie C. L. Wang. **Delta DLP 3D Printing of Large Model**. IEEE Transactions on Automation Science and Engineering (**TASE**), Vol. 15, No. 3, pp. 1193-1204, 2018.
- [11] **Ran Yi**, Yong-Jin Liu, Yu-Kun Lai. **Evaluation on the Compactness of Supervoxels**. IEEE International Conference on Image Processing (ICIP 2018), pp. 2212-2216, 2018.

[12] Yong-Jin Liu, Chun-Xu Xu, **Ran Yi**, Dian Fan, Ying He. **Manifold Differential Evolution (MDE): A Global Optimization Method for Geodesic Centroidal Voronoi Tessellations on Meshes**. ACM Transactions on Graphics (**SIGGRAPH ASIA 2016**), Vol. 35, No. 6, Article No. 243, 2016.

[13] Chenming Wu\*, **Ran Yi\***, Yong-Jin Liu, Ying He, Charlie C.L. Wang. **Delta DLP 3D Printing with Large Size**. The 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016), pp. 2155-2160, 2016.

\* Equal contribution

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## HONORS AND AWARDS

CCF-CV Award	11/2019
MSRA Fellowship Nomination	11/2019
National Graduate Student Scholarship	10/2019
National Graduate Student Scholarship	10/2018
CCF-CV Award (nomination)	10/2018
Beijing Outstanding Graduates (undergraduate)	07/2016
Excellent Graduates of Tsinghua University (undergraduate)	07/2016
Excellent Academic Performance Single Scholarship	10/2015

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## SKILLS AND OTHERS

**Programming languages:** C++, Python, MATLAB

**Deep learning framework:** Pytorch, Tensorflow, Caffè