

QINGYANG TAN

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RESEARCH INTERESTS

Computer Graphics, Physical Simulation, Geometry Processing, Computer Vision, Robotics, Machine Learning

EDUCATION

- University of Maryland, College Park (UMD), U.S.** 2018 – Present
Ph.D. Candidate in Computer Science Advisor: Prof. Dinesh Manocha GPA: 4.0/4.0
- University of Chinese Academy of Sciences (UCAS), Beijing, China** 2014 – 2018
B.Eng. in Computer Science and Technology GPA: 3.9/4.0 Rank: 1/61
- Massachusetts Institute of Technology (MIT), U.S.** 2017
Special Student in EECS GPA: 5.0/5.0

PUBLICATIONS AND MANUSCRIPTS

A Repulsive Force Unit for Garment Collision Handling in Neural Networks

Qingyang Tan, Yi Zhou, Tuanfeng Wang, Duygu Ceylan, Xin Sun, Dinesh Manocha
European Conference on Computer Vision (ECCV), 2022

N-Penetrate: Active Learning of Neural Collision Handler for Complex 3D Mesh Deformations

Qingyang Tan, Zherong Pan, Breannan Smith, Takaaki Shiratori, Dinesh Manocha
Thirty-ninth International Conference on Machine Learning (ICML), 2022

LCollision: Fast Generation of Collision-Free Human Poses using Learned Non-Penetration Constraints

Qingyang Tan, Zherong Pan, Dinesh Manocha
AAAI Conference on Artificial Intelligence (AAAI), 2021

Mesh-based Variational Autoencoders for Localized Deformation Component Analysis

Qingyang Tan*, Ling-Xiao Zhang*, Jie Yang, Yu-Kun Lai, Lin Gao
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021

Multiscale Mesh Deformation Component Analysis with Attention-based Autoencoders

Jie Yang, Lin Gao, Qingyang Tan, Huang Yihua, Shihong Xia, Yu-Kun Lai
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2021

DeepMNavigate: Deep Reinforced Multi-Robot Navigation Unifying Local & Global Collision

Qingyang Tan, Tingxiang Fan, Jia Pan, Dinesh Manocha
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020

Realtime Simulation of Thin-Shell Deformable Materials using CNN-Based Mesh Embedding

Qingyang Tan, Zherong Pan, Lin Gao, Dinesh Manocha
IEEE Robotics and Automation Letters (RA-L), 2020
Also presented at International Conference on Robotics and Automation (ICRA), 2020

Variational Autoencoders for Deforming 3D Mesh Models

Qingyang Tan, Lin Gao, Yu-Kun Lai, and Shihong Xia
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018

Mesh-based Autoencoders for Localized Deformation Component Analysis

Qingyang Tan, Lin Gao, Yu-Kun Lai, Jie Yang, and Shihong Xia
AAAI Conference on Artificial Intelligence (AAAI) (Spotlight), 2018

RESEARCH EXPERIENCE

Generating Collision-Free 3D Models

UMD

Jan 2020 – Present

Doctoral Thesis Research Advisor: Prof. Dinesh Manocha

- Implemented a fast neural network collision detector based on penetration depth
- Used learned attention weight to decompose collision penetration energy and to fit the locality of self-collisions
- Fused regression loss, margin ranking loss, and classification loss to boost performance
- Built a constraint optimizer for collision response using neural network

Adobe Research

May 2022 – Aug 2022

Research Intern Mentor: Dr. Noam Aigerman

Adobe Research

May 2021 – Aug 2021

Research Intern Mentor: Dr. Yi Zhou

Facebook Reality Labs

May 2020 – Aug 2020

Research Intern Manager: Dr. Takaaki Shiratori

Robot Navigation System

UMIACS, UMD

May 2019 – June 2020

Research Assistant Advisor: Prof. Dinesh Manocha

- Implemented a navigation system using deep reinforced learning
- Unified global and local observation

Cloth Simulation through Neural Network

UMIACS, UMD

June 2018 – Jan 2020

Research Assistant Advisor: Prof. Dinesh Manocha

- Implemented feature to vertex neural network layer to enhance cloth embedding accuracy
- Added physics-based loss to achieve more deformation details
- Predicted cloth deformation sequence using stateful recurrent neural network

Recognition of Isolated and Continuous Sign Language

Institute of Computing Technology (ICT), CAS Beijing, China

Sept. 2017 – June 2018

Bachelor Thesis Research Advisors: Prof. Xilin Chen, Prof. Xiujuan Chai

- Developed end-to-end and multi-task framework to classify sign language video
- Designed spatial and temporal attention residual learning

Geometry Deep Learning on Shape Deformation

ICT, CAS Beijing, China

May 2016 – Sept. 2017

Research Assistant Advisors: Prof. Lin Gao, Prof. Yu-Kun Lai, Prof. Shihong Xia

- Combined neural network and intrinsic mesh feature to analysis and generate 3D data
- Defined new tunable parameters for the network to capture most important deformations in certain dimensions
- Applied graph-based Convolutional Neural Networks (CNN) on the irregular 3D mesh surface
- Added distance-based sparsity constraint to autoencoder framework

TEACHING EXPERIENCE

Teaching Assistant, CMSC424 Database Design, UMD

Fall 2021 / Spring 2022

Teaching Assistant, CMSC320 Introduction to Data Science, UMD

Fall 2020 / Spring 2021

Teaching Assistant, CMSC420 Advanced Data Structures, UMD

Spring 2020

SKILLS

- Hands on experience of Machine Learning and Neural Network libraries including PyTorch, TensorFlow, scikit-learn, Theano, Caffe
- Fluent in C, Matlab, Python
- Knowledge of SQL, Verilog, HTML

ACADEMIC SERVICES

- SIGGRAPH Reviewer 2021
- CVPR Reviewer 2019 / 2020 / 2021 / 2022
- ICCV Reviewer 2019

- ECCV Reviewer 2020
- WACV Reviewer 2020 / 2021
- NeurIPS Reviewer 2022
- ICML Reviewer 2022
- ICLR Reviewer 2022
- AAAI Reviewer 2020 / 2021 / 2022
- RA-L Reviewer
- UMD CS Graduate Program Admission Reviewer 2019 / 2020

♥ HONORS AND AWARDS

<i>UMD Computer Science Department Dean's Fellowship</i>	2018-2019
<i>Beijing Excellent Graduate</i>	June 2018
<i>UCAS Excellent Graduate</i>	June 2018
<i>UCAS Excellent Bachelor Thesis</i>	June 2018
<i>UCAS First-Class Academy Fellowship</i>	Oct. 2015 / Oct. 2016 / Oct. 2017
<i>UCAS Excellent Undergraduate Research-Intern Report</i>	Nov. 2015 / Apr. 2016

i MISCELLANEOUS

- Languages: English - Fluent, Mandarin - Native speaker
- Hobbies: Swimming, Science Fiction