

# Q. Tang

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## Education

### Information & Communication Engineering

Beijing Jiaotong University

MPhil Student in School of Computer and Information Technology

Sept. 2021 - Present

- Advised by Prof. Yao Zhao (IEEE Fellow), Research interest in computer vision, especially in Image and Video Restoration.

### Software Engineering

Beijing Jiaotong University

B.Eng. in School of Software Engineering (with honors)

Sept. 2017 - Jun. 2021

- GPA 3.81/4.0, top 5%

### Finance (Dual Degree)

Beijing Jiaotong University

B.Ec. in School of Economics and Management

Sept. 2018 - Jun. 2021

- GPA 3.64/4.0

## Publication

### BridgeNet: A joint learning network of depth map super-resolution and monocular depth estimation

CCF-A

Qi Tang, Runmin Cong\*, Ronghui Sheng, Lingzhi He, Dan Zhang, Yao Zhao, and Sam Kwong

Oct. 2021

- ACM International Conference on Multimedia (ACM MM), pp. 2148-2157, 2021.

## Experiences

### Research on Joint Depth Map Super-Resolution and Monocular Depth Estimation Algorithm

The Institute of Information Science, Beijing Jiaotong University

Beijing Key Laboratory of Advanced Information Science and Network Technology

Principal Investigator

Dec. 2020 - Jun. 2021

- Existing color-guided depth map super-resolution methods usually necessitate an extra branch to extract high-frequency detail information from RGB image to guide the low-resolution depth map reconstruction. However, because there are still some differences between the two modalities, direct information transmission in the feature dimension or edge map dimension cannot achieve satisfactory result, and may even trigger texture copying in areas where the structures of the RGB-D pair are inconsistent. Inspired by the multi-task learning, we propose a joint learning network of depth map super-resolution (DSR) and monocular depth estimation (MDE) without introducing additional supervision labels.
- The project is the recipient of the Excellent Undergraduate Graduation Design (Thesis) of Beijing Ordinary Colleges and Universities.** A paper is accepted by ACM International Conference on Multimedia. The patent application for invention entering the substantive examination stage (**A Method of Depth Map Super-Resolution joint Monocular Depth Estimation**, application number: 202110803976.2).
- Implement based on Python, PyTorch, MindSpore

### 3D Reconstruction of High-Speed Rail-Wheel Based on Coded Structured Light

School of Computer and Information Technology, Beijing Jiaotong University  
Rail Transit Intelligent Inspection and Monitoring Institute

Principal Investigator

Apr. 2019 - Jul. 2020

- The wheel-rail attitude of high-speed railway reflects the complex dynamic interaction and restraint relationship between wheels and rails. Obtaining high-precision high-speed railway wheel-rail attitude is of great significance for ensuring the safe operation of high-speed railways. This project is based on machine vision theory and methods, and focuses on the 3D reconstruction method of high-speed rail wheel-rail attitude based on coded structured light.
- The project is supported by National Training Program of Innovation and Entrepreneurship for Undergraduates.** We adopt the method of coded structured light based on space codification, projecting a single pattern on the surface of the wheel and track, improving the accuracy of feature point extraction and recognition. And we combine De Bruijn analysis with wavelet transform analysis, increasing the density of point cloud and realizing the dense reconstruction by a single shot. The development of 3D reconstruction software based on coded structured light, offering a platform for the 3D reconstruction based on active vision, visualization and editing of point cloud data, and is applied for a software copyright (**Structured Light 3D Reconstruction Software V1.0**, registration number: 2022SR0655971).
- Development based on C++, OpenCV, PCL, QT

## Skills

### Programming

Python, JAVA, C, C++, LaTeX

### ML Framework

PyTorch, TensorFlow, MindSpore, PaddlePaddle

### Data Manage

SQL and some NoSQL

### Lib. or Tools

OpenCV, PCL, MATLAB, PowerPoint, etc.

### Languages

Chinese, English



2022 GitHub Commit Record