Chaoyue Song

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EDUCATION

Shanghai Jiao Tong University (SJTU)   Sep 2016 - Jul 2020

B.E. in Information Engineering (AI), School of Electronic Information and Electrical Engineering

- Overall GPA: 87/100   Math-related: 90/100
- Core Courses: Machine Learning (91), Digital Image Processing (94), Discrete Mathematics (100), Thinking and Approach of Programming (C++, 92), Data Structure and Algorithms (89), Linear Algebra (90), Probability and Statistics (92), Calculus (91), Intelligent Internet of Things (96)

RESEARCH INTERESTS

Computer Vision, Machine Learning

PUBLICATIONS

- **Chaoyue Song**, Jiacheng Wei, Ruibo Li, Fayao Liu, Chen Qian, Guosheng Lin. **Unsupervised 3D Pose Transfer with Cross Consistency and Dual Reconstruction**, *Under Review*, 2021
- **Chaoyue Song**, Jiacheng Wei, Ruibo Li, Fayao Liu, Guosheng Lin. **3D Pose Transfer with Correspondence Learning and Mesh Refinement**, in *Neural Information Processing Systems (NeurIPS)*, 2021
- Yugang Chen, Muchun Chen, **Chaoyue Song**, Bingbing Ni. **CartoonRenderer: An Instance-based Multi-Style Cartoon Image Translator**, in *International Conference on Multimedia Modeling (MMM)*, 2020
- **Chaoyue Song**, Yugang Chen, Shulai Zhang, Bingbing Ni. **Facial Image Deformation Based on Landmark Detection**, a*rXiv, 2019*

RESEARCH EXPERIENCE

Nanyang Technological University   Oct 2020 - Present

Research Engineer   Advisor: Prof. Guosheng Lin   Singapore

Unsupervised 3D Pose Transfer with Cross Consistency and Dual Reconstruction

- Introduced an unsupervised deep learning framework to solve the 3D pose transfer problem in an end-to-end manner.
- Proposed a cross consistency learning scheme and a dual reconstruction objective to learn the pose transfer without supervision, adopted an as-rigid-as-possible deformer to preserve the body shape of the generated results.
- Demonstrated that our method achieves comparable performance as the state-of-the-art supervised methods quantitatively and qualitatively on both human and animal meshes and even outperforms some of them.
- The related paper is under review.

3D Pose Transfer with Correspondence Learning and Mesh Refinement

- Solved the pose transfer problem with our proposed correspondence-refinement network.
- Learned the shape correspondence by solving an optimal transport problem without any key point annotations and generated high-quality final meshes with our proposed elastic instance normalization in the refinement module.
- Demonstrated that our method outperforms state-of-the-art methods quantitatively and qualitatively on both human and animal meshes through extensive experiments.
- **Accepted by NeurIPS2021**.

SJTU Vision and Learning Lab   Feb 2019 - Nov 2019

Research Assistant   Advisor: Prof. Bingbing Ni   Shanghai, China

CartoonRenderer: An Instance-based Multi-Style Cartoon Image Translator

- Achieved the cartoonization by conducting transformation manipulation in the feature space with proposed Soft-AdaIN and completed the whole generating process which could be decoupled into "Modeling-Coordinating-Rendering" parts.
- Trained different models with the same dataset to accomplish the photo cartoonization and demonstrated that our

CartoonRenderer performed better.

- **Accepted by MMM2020**.

Facial Image Deformation Based on Landmark Detection

- Implemented facial image deformations that include the expansion of eyes and the shrinking of noses, mouths, and cheeks.
- Adopted a 106-point facial landmark detector that could provide control points to implement more authentic deformations for facial images.
- Used Bilinear Interpolation in the expansion and Moving Least Squares (MLS) in the shrinking which both have a good performance.

Research Center of Intelligent Internet of Things, SJTU   Feb 2019 - Jul 2019

Research Assistant   Advisor: Prof. Xiaohua Tian   Shanghai, China

Dense QR Decoder Based on TensorFlow Lite

- Developed an APP on Android which could decode plenty of QR codes (more than 160) at the same time, designed the APP in three modules: object detection, object tracking, and user interface.
- Adopted SSD based on TensorFlow Lite and an efficient FFT-based method in the object detection module, achieved the real-time feature (15 frames/s on CPU) and high recognition rate (157/160) by modifying the network structure.
- Designed an algorithm based on constructing an information matrix to accomplish the object tracking module, further improved the recognition rate (160/160) through multi-frame fusion.
- **National Undergraduate IoT Design Contest in China, First Prize in Final Contest (Top 35 of the 2000 teams)**.

HONORS & AWARDS

Excellecnt Graduate Award of Shanghai	Jul 2020
Outstanding Scholarship of Shanghai Jiao Tong University(Top 10%)	Nov 2019, Nov 2018, Nov 2017
Excellent League Cadre of Shanghai Jiao Tong University(Top 0.3%)	May 2019, May 2018
Excellent Student Cadre of Shanghai Jiao Tong University(Top 0.3%)	Oct 2018

TECHNICAL SKILLS

- **Programming Language:** C / C++, Python, VHDL, Verilog
- **Deep Learning Packages:** PyTorch, TensorFlow
- **Platforms and Tools:** MATLAB, LaTeX, LabVIEW, Unity