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

RESEARCH EXPERIENCE

3D Pose Transfer with Correspondence Learning and Mesh Refinement Nov 2020 - May 2021

Advisor: Prof. Guosheng Lin, Nanyang Technological University

- Solved the pose transfer problem with our proposed correspondence-refinement network. To the best of our knowledge, our method is the first to learn the correspondence between different meshes and refine the generated meshes jointly in the 3D pose transfer task
- 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

CartoonRenderer: An Instance-based Multi-Style Cartoon Image Translator May 2019 - Nov 2019

Advisor: Prof. Bingbing Ni, SJTU Vision and Learning Lab

- Proposed a "CartoonRenderer" framework which could utilize a single trained model to generate multiple cartoon styles, map photo into a feature model and render the feature model back into image space
- 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, such as CycleGAN, AdaIN method, and CartoonGAN, demonstrated that our CartoonRenderer performed better

Facial Image Deformation Based on Landmark Detection Feb 2019 - Jul 2019

Advisor: Prof. Bingbing Ni, SJTU Vision and Learning Lab

- Completed the deformations from two aspects: expansion of eyes and shrinking of noses, mouths, and cheeks
- Trained a 106-point facial landmark detector which could provide control points to implement more authentic deformations for facial images
- Used Bilinear Interpolation in the expansion and Moving Least Squares methods (MLS) includes affine deformations, similarity deformations, and rigid deformations in the shrinking which both had a good performance

Dense QR Decoder Based on TensorFlow Lite Feb 2019 - Jul 2019

National Undergraduate IoT Design Contest in China, First Prize in Final Contest (Top 35 of the 2000 teams)

Advisor: Prof. Xiaohua Tian, Research Center of Intelligent Internet of Things, SJTU

- Developed an APP on Android which could decode plenty of QR codes(more than 160) at the same time, designed this APP in three different modules: Object Detection, Object Tracking, and User interface
- Used machine learning model based on TensorFlow Lite and an efficient FFT-based method in 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 recognition rate(160/160) through multi-frame fusion

PUBLICATIONS

- **Chaoyue Song,** Jiacheng Wei, Ruibo Li, Fayao Liu, Guosheng Lin. **3D Pose Transfer with Correspondence Learning and Mesh Refinement**, *Under Review, 2021*
- Yugang Chen, Muchun Chen, **Chaoyue Song**, Bingbing Ni. **CartoonRenderer: An Instance-based Multi-Style Cartoon Image Translator**, *International Conference on Multimedia Modeling (MMM2020)*
- **Chaoyue Song**, Yugang Chen, Shulai Zhang, Bingbing Ni. **Facial Image Deformation Based on Landmark Detection**, *arXiv:1910.13671*

TECHNICAL SKILLS

- **Machine Learning:** PyTorch, TensorFlow, Caffe, Sklearn, Keras, NumPy, Pandas
- **Programming Language:** C / C++, Python, Java, VHDL, Verilog
- **Platforms and Tools:** MATLAB, LaTeX, LabVIEW, Unity

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