YI LI

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EDUCATION

Northwestern University 09/2023-present

- Major: Computer Science in Thesis Track(Computer Vision) Evanston, IL
- Degree Expected: Master of Science
- GPA: 3.95/4.0

The Chinese University of Hong Kong, Shenzhen 09/2019–06/2023

- Major: Computer Engineering Shenzhen, China
- Degree: Bachelor of Engineering
- GPA: 3.71/4.0

PUBLICATIONS

Yi Li, Yunan Wu, and Aggelos K. Katsaggelos. *Cross-Temporal Spectrogram Autoencoder (CTSAE): Unsupervised Dimensionality Reduction for Clustering Gravitational Wave Glitches.* **Accepted by** IEEE/CVF Computer Society Conference on Computer Vision and Pattern Recognition Workshops (**CVPRW**)

Yuda Qiu, **Yi Li**, Xiao Zitong, Xianggang Yu, Yushuang Wu, and Xiaoguang Han. *Toonme3D: Stylizing 3D Face by Reconstruction from Stylized Images.* Submitted to IEEE Transactions on Visualization and Computer Graphics(**TVCG**)

RESEARCH EXPERIENCES

Image & Video Processing Lab(IVPL), *Evanston, US* **11/2023-Present**

Graduate Researcher on **Image Processing**, Supervised by Aggelos K. Katsaggelos

Unsupervised LIGO Gravitational Wave Glitches Clustering 11/2023-03/2024

- Developed an unsupervised algorithm for clustering gravitational wave glitches captured by The Laser Interferometer Gravitational-Wave Observatory (LIGO)
- Builded a novel four-branch autoencoder which integrates CNN and ViT to extract global and local features from glitches across four different time window durations
- Designed a novel CLS fusion module for effective inter-branch communication

Generation and Analysis of Pixels, Points and Polygons(GAP) Lab, *Shenzhen, China* **01/2022–09/2023**

Undergraduate Researcher on **3D Computer Vision**, Supervised by Xiaoguang Han

Multi-style 3D Face Stylization 05/2023-09/2023

- Achieved **style transfer** in 3D space, transferring a real 3D face into various styles
- Represented shape and texture in **UV maps**. Adopted conditional **StyleGAN,** using features extracted from 3D real faces as conditions and latent to control style
- Used **self-supervision** training strategy. Only 2D images were used to supervised the 3D network.

3D Cartoon Face Reconstruction 05/2022-05/2023

- Represented 3D cartoon shape using **3DMM**, 3D cartoon texture using **UV maps**. Estimated shape by regressing 3DMM parameters and texture by advanced generative adversarial networks
- Expanded handcraft 3D texture into UV texture map. Adopted **StyleGANv2** as texture GAN and train it using these texture maps with standard GAN loss
- Modified **ResNet** to output 3DMM parameters, camera pose, lighting and texture GAN latent. Finetuned ResNet and texure-GAN using cleaned 2D image data. Designed novel loss including normal loss, lighting regularization loss and segmentation loss
- Achieved **SOTA** result in 2D landmark difference(outperform by **21%**) and color difference(outperform by **22%**)

COURSE PROJECT

Deep Learning Project **09/2023-12/2023**

- Implemented Turkish-English Translation models using recurrent neural network(**RNN**) and long short-term memory(**LSTM**)
- Implemented a **3D scene Neural Style-Transfer** model with depth enhancement based on **ResNet** and **Midas**

Computer Graphics Project **02/2023-05/2023**

- Implemented a basic **rasterization pipeline** with Phong reflection model on CPU in C++
- Completed **ray-tracing** algorithm based on radiometry, including Monte-Carlo simulation, reflection, and refraction
- Implemented a **point-to-mesh conversion** algorithm BPA in C++, and used OpenGL for its visualization.

Distributed and Parallel Computing Project **09/2022-12/2022**

- Simulated N-body problem using **openMP, MPI, Pthread, and CUDA**
- Compared Sequential, **openMP, MPI, CUDA and Pthread programming** in thermal diffusion simulation

PROFESSIONAL SKILLS

Programming Languages: Python, C, C++, SQL, Verilog, CUDA

Frameworks: PyTorch, TensorFlow, OpenCV, Scikit-learn, Vue

Coursework: Object Oriented Programming, Data Structure, Operating System, Computer Architecture, Database System, Software Engineering, Computer Network, Distributed and Parallel Computing, Optimization, Computer Graphics, Computer Vision, Machine Learning, Deep Learning, Reinforce Learning