

YI LI

(224)-619-9066 • yili2023.1@u.northwestern.edu

EDUCATION

Northwestern University	09/2023-present
♦ Major: Computer Science	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: 3.781/4.0; Ranking: 5/101 (Top 4.95%)	

PUBLICATIONS

Yi Li, Yunan Wu, and Aggelos K. Katsaggelos. *Cross-Temporal Spectrogram Autoencoder (CTSAE): Unsupervised Dimensionality Reduction for Clustering Gravitational Wave Glitches*. Submitted to Conference on Computer Vision and Pattern Recognition 2024 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

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

Undergraduate Researcher Supervised by Xiaoguang Han

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 texture-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%**)

Multi-style 3D Face Reconstruction

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.

Image & Video Processing Lab(IVPL), Evanston, US

11/2023-Present

Master Researcher 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)
- ♦ Built 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

COURSE PROJECT

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

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.

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**

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