

YI LI

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

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: 3.781/4.0; 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 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	
<u>Unsupervised LIGO Gravitational Wave Glitches Clustering</u>	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	
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	
<u>Multi-style 3D Face Reconstruction</u>	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.	
<u>3D Cartoon Face Reconstruction</u>	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%)	

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