Tommy Jiang

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EDUCATION

University of Wisconsin Madison *(Department of Electrical and Computer Engineering)* Madison, WI
MSc. Electrical and Computer Engineering Sept. 2024 – Dec. 2025 (Expected)
University of Manchester *(Department of Electrical and Electronic Engineering)* Manchester, U.K.
MSc. Communication and Signal Processing (GPA: 75.5/100, Honor: Distinction) Sept. 2022 – Dec. 2023
Changchun University of Science and Technology *(School of Optoelectronic Engineering)* Changchun, China
BEng. Optoelectronic Information Science and Engineering (GPA: 3.86/5.00, Rank:11/221) Sept. 2018 – June. 2022

RESEARCH EXPERIENCE

High Quality Human Avatar Rendering via Gaussian Splatting
Supervised by Prof. Haoang Li Jan. 2024 – Present

- Designed and implemented an enhanced Gaussian Splatting model to render the more accurate human avatar by introducing image features of human action flow.
- Extracted image features from different frames with attention to each other, and attached the features to each Gaussian ellipsoid via distillation.
- Improved rendering accuracy with the extra supervision of feature consistency within time domain.

Binary CNN Design and Application on Computational Camera Scamp5d
Supervised by Prof. Piotr Dudek June 2023 – Sept. 2023

- Designed and implemented a binary convolutional neural network adapted on the special computing architecture of Scamp5d, the intelligent camera designed by Piotr.
- Trained a binary network named LiB-Net, whose weights and inputs of each layer are all binary values, transferring multiplication with weights to XNOR operations.
- Separated the traditional convolution unit into depth-wise convolution and channel-wise convolution, reducing the parameter number and FLOPS of the model.
- Issued a novel convolution strategy of calculating the Hadamard products of the input photo and a kernel map composed of repeated convolution kernel, conducing the convolution on different regions happen parallelly and accelerating the convolution on a single channel.
- Issued a novel strategy of tiling all the channels on a big image map instead of piling them up, in order to operating convolution across different channels parallelly, accelerating the convolution on the whole multi-channel image.

JART: ViT-based Network for Classification on Human Motion
Supervised by Prof. Lin Li Mar. 2022 – Jun. 2022

- Designed and trained a Transformer-structured network based on dataset UCF-101, the network finally reached 94.3% in accuracy of validation.
- Clip a video stream into 3-dim spatial-temporal cubes and flatten them as a sequence of vector, converting videos from visual representation into sequential one to fit the structure of Transformer.
- Applied a classification token instead of flattened feature maps to concentrate feature and be fed into classification head, this token can collect feature information via attention instead of spatial convolution.
- Issued a data augmentation strategy on video data, comprising of temporal and spatial clipping and zooming, enhancing the grades on validation set and the generalization of the model on motion classification tasks.

AWARDS & DISTINCTIONS

Master of Science Degree with Distinction Dec. 2023
First-class Academic Scholarship 2018 – 2019, 2019 – 2020
Wang Daheng College Scholarship Nov. 2019
National 2nd Prize of 2020 Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM) Nov. 2020
National 3rd Prize of 8th National University Students' Opt-Sci-Tech Competition Sept. 2020
1st Prize of the University Students' Opt-Sci-Tech Competition in Northeast China Aug. 2020
Second Prize of Hisense Cup Artificial Intelligence Competition Dec. 2020

LANGUAGES AND SKILLS

Languages: Mandarin (native); Shanghainese (native)
English – Test Scores: IELTS 7.0 (Reading 8.0; Listening 7.0; Speaking 6.5; Writing 6.0)
Computer: Python (proficient), MATLAB (proficient), C (proficient), C++ (proficient), C# (basic), Photoshop (proficient), AfterEffects (proficient), Illustrator (proficient), StableDiffusion (proficient), Unity (basic)