Qitao Zhao

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EDUCATION

Shandong University   2019.9 — 2023.6 (expected)
Bachelor in Communication Engineering
- *Overall GPA: 93.94/100 Major GPA: 95.95/100,   Rank: 2/21 (1/140 in the first year)*
- *Relevant Courses: Machine Learning, Pattern Recognition and Deep Learning (95); Information Theory, Coding and Security (95); Labs of Deep Learning (97); Digital Signal Processing (97); Digital Image Processing (100); Probability and Statistics (100);*

RESEARCH INTERESTS

My research interests mainly lie in computer vision, especially in human shape/motion understanding (e.g., human pose estimation and cross-view gait recognition). I am also interested in revisiting conventional signal processing techniques in the context of learning-based computer vision, which I believe may bring new insights to many vision tasks.

PUBLICATIONS

1. **PoseFormerV2: Exploring Frequency Domain for Efficient and Robust 3D Human Pose Estimation**
   Qitao Zhao, Ce Zheng, Mengyuan Liu, Pichao Wang, Chen Chen
   *IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023*

RESEARCH EXPERIENCES

3D Human Pose Estimation [1]   **2022.4 — Present**
Research Intern, Advisor: Prof. Chen Chen   *CRCV, University of Central Florida*
- This work was driven by two practical concerns: existing transformer-based methods are inefficient to operate long joint sequences for improved accuracy and are not robust to the noise brought by unreliable 2D joint detection.
- We surprisingly found that the low-frequency coefficients of the input sequence are an excellent fit to solve these problems simultaneously. We built our method upon PoseFormer(V1) with such frequency representations.
- The proposed method significantly improves the efficiency of PoseFormerV1 to process long sequences and its robustness against noisy 2D joint detection. Our approach also generalizes well to other models, *e.g.*, MHformer, MixSTE.

Cross-view Gait Recognition   **2021.9 — 2022.4**
Research Intern, Advisor: Prof. Xianye Ben [Slides]   *DPAI Lab, Shandong University*
- Re-implemented state-of-the-art models (*e.g.* GeitSet, GLN, GaitPart) on multiple GPUs.
- Designed a transformer-based model for human motion modeling and ranked 5th on Int. Gait Recognition Competition.
- National patent: Authorship of patent "Multi-stage pyramid network for cross-view gait recognition".

SELECTED PROJECTS

Course Project (self-selected topic): Self-driving Assistance System with Car-detection   2021.9 — 2021.12
- Implemented a real-time YOLOv4 model on hardware using a web camera as video input with a 3D-printed container.
- Designed a webpage using *Streamlit* to visualize detection results and system information plus weather condition and road map.
- Source code for the project has been released on GitHub.

Course Project (labs of deep learning): Real-time Style Transfer   2021.12
- Implemented the model based on *Zhang et al*. "Multi-style Generative Network for Real-time Transfer" in ECCV 2018 workshop.
- Achieved real-time inference on a single Nvidia RTX 2080ti.

Online Course Learning: Stanford CS231n-2021   2021.7 — 2021.8
- Learned Deep Learning basics via videos and assignments.
- Read classic Deep Learning papers, *e.g.* LeNet-5, ResNet, GAN, Transformer.
- My solution to CS231n-2021 assignments has been released on GitHub.

SELECTED AWARDS

National Scholarship   Awarded top 0.2% students national-wide by Ministry of Education of P.R. China, 2020
First-class Scholarship   Awarded students of excellent academic performance (top 5% in Shandong University) in 2020, 2022

SKILLS

- Tools and Languages

  – Python, C, Git, LaTeX, MarkDown, Microcontroller Unit
- Deep Learning Research

  – Pytorch, MATLAB, matplotlib, OpenCV, Numpy, Streamlit