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# Qitao Zhao

## Chongxin College, Shandong University

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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 More Efficient and Robust 3D Human Pose Estimation

Qitao Zhao, Ce Zheng, Mengyuan Liu, Pichao Wang, Chen Chen

*In submission, 2022*

### 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, ~~TeX~~LaTeX, Markdown, Microcontroller Unit
- Deep Learning Research
  - Pytorch, MATLAB, matplotlib, OpenCV, Numpy, Streamlit