wanrongz@usc.edu
https://ZoeyZheng0.github.io/

Wanrong (Zoey) Zheng

(213) 706-3365
Orchard Ave, Los Angeles

Education

University of Southern California, Ph.D. student in Computer Science, Advisor: Prof. Laurent Itti — *May. 2024 — Present*
University of Southern California, M.S. in Computer Science, Advisor: Prof. Ram Nevatia & Prof. Laurent Itti — *Aug. 2020 — May. 2023*
South University of Science and Technology, Exchange in Computer Science — *Jan. 2021 — Jun. 2021*

Research Interests

Explainable Artificial Intelligence [1]: Multimodal reasoning to enhance model capability and interpretability.
Multi-Modal Perception [2, 3, 4, 5, 6]: Exploring the synergistic effects of diverse data for enhanced machine understanding.

Publications

1. **Wanrong Zheng***, Yunhao Ge*, Xingrui Wang, Di Wu, Yao Xiao, Xu Zhi, Linwei Li, Ziyan Wu, and Laurent Itti. **A Graphical Framework for Knowledge Exchange between Humans and Neural Networks**. *Under review.*
2. **Wanrong Zheng***, Haidong Zhu*, Zhaoheng Zheng, and Ram Nevatia. **GaitSTR: Gait Recognition with Sequential Two-stream Refinement**. *IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM'24).* [paper][code].
3. Haidong Zhu, **Wanrong Zheng**, Zhaoheng Zheng, and Ram Nevatia. **ShARc: Shape and Appearance Recognition for Person Identification In-the-wild**. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV'24).* [paper][slides].
4. Haidong Zhu*, **Wanrong Zheng***, Zhaoheng Zheng, and Ram Nevatia. **GaitRef: Gait Recognition with Refined Sequential Skeletons**. *IEEE International Joint Conference on Biometrics (IJCB'23),* **(Oral)**. [paper][code][project].
5. Haidong Zhu, Zhaoheng Zheng, **Wanrong Zheng**, and Ram Nevatia. **CAT-NeRF: Constancy-Aware Tx^{2}Former for Dynamic Body Modeling**. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW'23).* [paper][code][supp].
6. Xiaoke Jiang, Yu Qiao, Junjie Yan, Qichen Li, **Wanrong Zheng**, and Dapeng Chen. **SSN3D: Self-Separated Network to Align Parts for 3D Convolution in Video Person Re-Identification**. *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI'21).* [paper][supp][slides].

Employment

University of Southern California — **Los Angeles, CA**
Research Assistant, Advisor: Prof. Laurent Itti — *May. 2024 — Present*
Research Assistant, Advisor: Prof. Ram Nevatia — *Jan. 2022 — May. 2024*

SenseTime Technology Co., Ltd. — **Shenzhen, China**
Research Engineer, Advisor: Dr. Yichao Wu & Dr. Xiaoke Jiang — *Sep. 2019 — Aug. 2021*

Chinese Academy of Science, Shenzhen Institutes of Advanced Technology — **Shenzhen, China**
Research Assistant, Advisor: Dr. Qiong Wang — *Jul. 2018 — Jun. 2019*

The Chinese University of Hong Kong, Shenzhen Research Institute — **Shenzhen, China**
Research Intern — *Dec. 2017 — Jun. 2018*

Awards & Honors

1st on MS1M dataset in Masked Face Recognition Challenge (ICCV 2021) out of 136 teams — *Oct. 2021*
2nd on Glint360k dataset in Masked Face Recognition Challenge (ICCV 2021) out of 86 teams — *Oct. 2021*
National Endeavor Scholarship for Top Undergraduate Students of China (top 1%) — *Nov. 2017*

Service

Reviewer: CVPR 2026, AISTATS 2026, IEEE Transactions on Cognitive and Developmental Systems, IEEE Transactions on Multimedia

Research Experience

iLab, University of Southern California — **Los Angeles, CA**
Research Assistant, Advisor: Prof. Laurent Itti — *May. 2024 — Present*

- **A Graphical Framework for Knowledge Exchange between Humans and Neural Networks**
  - Proposed a pipeline for humans to directly interact with Neural Networks on a structural representation of visual concepts.
  - Constructed Structural Concept Graphs (SCG), a reasoning logic mechanism of Neural Networks in classification tasks, using reasonable concepts extractor and Graph reasoning Network.
  - Humans could make decisions on the SCG and use SCG to guide the original Neural Network backward by knowledge distillation.
  - Accuracy increased by about 4% improvement on target ImageNet classes without a drop on the other classes.
  - Submitted one primary-author paper [1].

IRIS Computer Vision Lab, University of Southern California — **Los Angeles, CA**
Research Assistant, Advisor: Prof. Ram Nevatia — *Jan. 2022 — May. 2024*

- **GaitSTR: Gait Recognition with Sequential Two-Stream Refinement**
  - Proposed a two-stream refinement approach to enhance gait recognition by fusing silhouette and skeleton-based features.
  - Incorporated self-correction mechanisms within skeleton representations (joints and bones) and cross-modal corrections using temporal consistency from silhouettes.
  - Published one primary-author paper on TBIOM 2024 [2].
- **ShARc: Shape and Appearance Recognition for Person Identification In-the-wild**
  - Developed a multimodal framework that integrates the pose and shape encoder with the aggregate appearance encoder for robust person identification in uncontrolled environments.
  - Achieved state-of-the-art results on public cloth-changing person re-identification datasets such as CCVID, MEVID, and BRIAR.
  - Published one co-author paper on WACV 2024 [3].
- **GaitRef: Gait Recognition with Refined Sequential Skeletons Knowledge Exchange**
  - Combined the silhouettes and skeletons information and refined the framewise joint predictions for gait recognition.
  - On Gait3D, the proposed method outperformed the baseline by 6.1% on Rank-1 and 5.4% on Rank-5.
  - Published one primary-author paper on IJCB 2023 (oral) [4]. This work contributed to a long-term project sponsored by IARPA.
- **CAT-NeRF: Constancy-Aware Tx^{2}Former for Dynamic Body Modeling**
  - Proposed a novel structure to combine two Transformer layers for reconstructing dynamic body shapes, which separated appearance constancy and uniqueness of videos.
  - Achieved a 30.3% PSNR relative improvement on H36M, compared with the SOTA baseline method.
  - Published one co-author paper on CVPRW 2023 [5].

Identity Verification, SenseTime — **Shenzhen, China**
Research Engineer, Advisor: Dr. Yichao Wu & Mr. Ding Liang — *Jan. 2021 — Aug. 2021*

- **Large-scale Phone Unlock Facial Verification**
  - Updated face unlock models for Chinese mobile phone manufacturers such as Huawei, Oppo, and Vivo.
  - Prepared three different size levels of models for various products' performance needs and used different training strategies.
  - Achieved 1e-6FAR@recall 90% for different races, including Caucasian, African, Asian, Indian, and Latino.

Smart City Group, SenseTime — **Shenzhen, China**
Research Engineer, Advisor: Dr. Xiaoke Jiang & Dr. Junjie Yan — *Dec. 2019 — Dec. 2020*

- **Self-Separated Network to Align Parts for 3D Convolution in Video Person Re-Identification**
  - Trained the Self-Separated Network in supervised / semi-supervised / unsupervised ways, which proved the efficiency of the semi-supervised alignment strategies, which used the labels with the selected position.
  - Designed and visualized on both synthetic and real data to show that selected labels helped the attention classifiers to pay attention to the desired parts and could adjust mistaken pose estimation.
  - Received a 15.5% Rank-1 improvement on iLIDS compared to the fully supervised way.
  - Published one co-author paper on AAAI 2021 [6].

Patents

1. **Wanrong Zheng**, and Xiaoke Jiang. **A Identification method Based on History Passenger Flow Big Data.** *CN113269129A* (2021)
2. Sun Zhe, **Wanrong Zheng**, Xiaoke Jiang, Xinghua Yao, and Cong Ji. **Passenger Illegal Handing Bags Across Railing Detection in Real Railway Scene.** *CN112818844A* (2021)
3. **Wanrong Zheng**, Xiaoke Jiang, Jikui Bao, Qichen Li, and Cong Ji. **A Railway Face Recognition Solution Based on History Passengers' Riding Pattern.** *CN112232424A* (2020)