

## 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

**Vision-and-Language Navigation** [1]: Developing zero-shot language-guided agents navigating in complex visual environments.  
**Explainable Artificial Intelligence** [2]: Multimodal reasoning to enhance model capability and interpretability.  
**Multi-Modal Perception** [3, 4, 5, 6, 7]: Exploring the synergistic effects of diverse data for enhanced machine understanding.

## PUBLICATIONS

1. Wanrong Zheng, Yunhao Ge, and Laurent Itti. **Three-Step Nav: A Hierarchical Global–Local Planner for Zero-Shot Vision-and-Language Navigation**. Under review. [\[paper\]](#)[\[supp\]](#).
2. 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. [\[paper\]](#).
3. Wanrong Zheng\*, Haidong Zhu\*, Zhaocheng Zheng, and Ram Nevatia. **GaitSTR: Gait Recognition with Sequential Two-stream Refinement**. *IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM'24)*. [\[paper\]](#)[\[code\]](#).
4. Haidong Zhu, Wanrong Zheng, Zhaocheng 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)*. [\[paper\]](#)[\[slides\]](#).
5. Haidong Zhu\*, Wanrong Zheng\*, Zhaocheng Zheng, and Ram Nevatia. **GaitRef: Gait Recognition with Refined Sequential Skeletons**. *IEEE International Joint Conference on Biometrics (IJCB'23)*, (Oral). [\[paper\]](#)[\[code\]](#)[\[project\]](#).
6. Haidong Zhu, Zhaocheng Zheng, Wanrong Zheng, and Ram Nevatia. **CAT-NeRF: Constancy-Aware Tx<sup>2</sup>Former for Dynamic Body Modeling**. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW'23)*. [\[paper\]](#)[\[code\]](#)[\[supp\]](#).
7. 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

<b>University of Southern California</b> Research Assistant, Advisor: Prof. Laurent Itti Research Assistant, Advisor: Prof. Ram Nevatia	Los Angeles, CA May. 2024 – Present Jan. 2022 – May. 2024
<b>SenseTime Technology Co., Ltd.</b> Research Engineer, Advisor: Dr. Yichao Wu & Dr. Xiaoke Jiang	Shenzhen, China Sep. 2019 – Aug. 2021
<b>Chinese Academy of Science, Shenzhen Institutes of Advanced Technology</b> Research Assistant, Advisor: Dr. Qiong Wang	Shenzhen, China Jul. 2018 – Jun. 2019
<b>The Chinese University of Hong Kong, Shenzhen Research Institute</b> Research Intern	Shenzhen, China Dec. 2017 – Jun. 2018

## AWARDS & HONORS

1st on MS1M dataset in <b>Masked Face Recognition Challenge</b> (ICCV 2021) out of 136 teams	Oct. 2021
2nd on Glint360k dataset in <b>Masked Face Recognition Challenge</b> (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 Multimedia, IEEE Transactions on Cognitive and Developmental Systems, International Journal of Computer Vision

## RESEARCH EXPERIENCE

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### iLab, University of Southern California

Research Assistant, Advisor: Prof. [Laurent Itti](#)

Los Angeles, CA

May. 2024 — Present

#### • Three-Step Nav: A Hierarchical Global–Local Planner for Zero-Shot Vision-and-Language Navigation

- Proposed a hierarchical global-local framework that alternates between *looking forward* to sketch global plans, *looking now* for fine-grained local grounding, and *looking backward* to audit execution history.
- Designed an adaptive judge module equipped with meta-skills to detect navigation drift and trigger self-correction without task-specific fine-tuning.
- Achieved state-of-the-art zero-shot performance on R2R-CE and RxR-CE datasets, reducing navigation error by 15% and improving SPL by 12% on R2R-CE validation splits.
- Submitted one primary-author paper [1].

#### • 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 [2].

### IRIS Computer Vision Lab, University of Southern California

Research Assistant, Advisor: Prof. [Ram Nevatia](#)

Los Angeles, CA

Jan. 2022 — May. 2024

#### • 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 [4].

#### • 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) [5].

### Identity Verification, SenseTime

Research Engineer, Advisor: Dr. [Yichao Wu](#) & Mr. [Ding Liang](#)

Shenzhen, China

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

Research Engineer, Advisor: Dr. [Xiaoke Jiang](#) & Dr. [Junjie Yan](#)

Shenzhen, China

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.
- Received a 15.5% Rank-1 improvement on iLIDS compared to the fully supervised way.
- Published one co-author paper on AAAI 2021 [7].

## PATENTS

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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)