

## EDUCATION

University of Southern California, Ph.D. student in Computer Science, Advisor: Prof. <a href="#">Laurent Itti</a>	May. 2024 — Present
University of Southern California, M.S. in Computer Science, Advisor: Prof. <a href="#">Ram Nevatia</a> & Prof. <a href="#">Laurent Itti</a>	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\*, Xingrui Wang, Di Wu, Yao Xiao, Xu Zhi, Linwei Li, Ziyang Wu, and Laurent Itti. **A Graphical Framework for Knowledge Exchange between Humans and Neural Networks**. *Under review*. [\[paper\]](#).
2. **Wanrong Zheng**, Yunhao Ge, and Laurent Itti. **Three-Step Nav: A Hierarchical Global-Local Planner for Zero-Shot Vision-and-Language Navigation**. *Annual Conference on Artificial Intelligence and Statistics (AISTATS'26)*. [\[paper\]](#)[\[supp\]](#).
3. **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)*. [\[paper\]](#)[\[code\]](#).
4. 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)*. [\[paper\]](#)[\[slides\]](#).
5. 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). [\[paper\]](#)[\[code\]](#)[\[project\]](#).
6. Haidong Zhu, Zhaoheng 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. <a href="#">Laurent Itti</a> Research Assistant, Advisor: Prof. <a href="#">Ram Nevatia</a>	<b>Los Angeles, CA</b> May. 2024 — Present Jan. 2022 — May. 2024
<b>SenseTime Technology Co., Ltd.</b> Research Engineer, Advisor: Dr. <a href="#">Yichao Wu</a> & Dr. <a href="#">Xiaoke Jiang</a>	<b>Shenzhen, China</b> Sep. 2019 — Aug. 2021
<b>Chinese Academy of Science, Shenzhen Institutes of Advanced Technology</b> Research Assistant, Advisor: Dr. <a href="#">Qiong Wang</a>	<b>Shenzhen, China</b> Jul. 2018 — Jun. 2019
<b>The Chinese University of Hong Kong, Shenzhen Research Institute</b> Research Intern	<b>Shenzhen, China</b> Dec. 2017 — Jun. 2018

## AWARDS & HONORS

1st on <a href="#">MS1M</a> dataset in <a href="#">Masked Face Recognition Challenge</a> (ICCV 2021) out of 136 teams	Oct. 2021
2nd on <a href="#">Glint360k</a> dataset in <a href="#">Masked Face Recognition Challenge</a> (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.
- Published one primary-author paper on AISTATS 2026 [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)