

HAIDONG ZHU

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EDUCATION

Ph.D. candidate, Computer Science, University of Southern California, 2019 - 2024 (expected)

B.E., Electronic Information Science and Technology, Tsinghua University, 2015 - 2019

PUBLICATIONS

Haidong Zhu*, Wanrong Zheng*, Zhaoheng Zheng, and Ram Nevatia, **GaitRef: Gait Recognition with Refined Skeletons**, *IEEE International Joint Conference on Biometrics (IJCB)*, 2023 (Oral). (equal contribution) [\[Paper\]](#)[\[Code\]](#)

Haidong Zhu, Zhaoheng Zheng, Wanrong Zheng, and Ram Nevatia, **CAT-NeRF: Constancy-Aware Tx²Former for Dynamic Body Modeling**, *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, pp. 6618-6627, 2023. [\[Paper\]](#)[\[Code\]](#)

Haidong Zhu *et al.*, **Multimodality Neural Radiance Field**, *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 9393-9399, 2023. [\[Paper\]](#)[\[Paper\]](#)

Haidong Zhu, Zhaoheng Zheng, and Ram Nevatia, **Gait Recognition Using 3-D Human Body Shape Inference**, *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, pp. 909-918, 2023. [\[Paper\]](#)[\[Supp\]](#)

Haidong Zhu, Ye Yuan, Yiheng Zhu, Xiao Yang, and Ram Nevatia, **OPEN: Order-preserving Point Cloud Encoder-Decoder Network for HumanBody Shape Refinement with Dense Correspondence**, *Proceedings of the International Conference on Pattern Recognition (ICPR)*, pp. 521-527, 2022 (Oral). [\[Paper\]](#)[\[Supp\]](#)

Haidong Zhu, Zhaoheng Zheng, and Ram Nevatia, **Temporal Shift and Attention Modules for Graphical Skeleton Action Recognition**, *Proceedings of the International Conference on Pattern Recognition (ICPR)*, pp. 3145-3151, 2022. [\[Paper\]](#)[\[Supp\]](#)

Haidong Zhu, Zhaoheng Zheng, Mohammad Soleymani, and Ram Nevatia, **Self-supervised Learning for Sentiment Analysis via Image-text Matching**, *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 1710-1714, 2022. [\[Paper\]](#)

Haidong Zhu, Arka Sadhu, Zhaoheng Zheng, and Ram Nevatia, **Utilizing Every Image Object for Semi-supervised Phrase Grounding**, *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, pp. 2210-2219, 2021. [\[Paper\]](#)

Manling Li *et al.*, **GAIA at SM-KBP 2020 - A Dockerized Multi-media Multi-lingual Knowledge Extraction, Clustering, Temporal Tracking and Hypothesis Generation System**, *Text Analysis Conference (TAC)*, 2020. [\[Paper\]](#)

Yueqi Duan*, Haidong Zhu*, He Wang, Li Yi, Ram Nevatia, and Leonidas J. Guibas, **Curriculum DeepSDF**, *European Conference on Computer Vision (ECCV)*, pp. 51-67, 2020. (equal contribution) [\[Paper\]](#)[\[Code\]](#)

Chuanzi He, Haidong Zhu, Jiyang Gao, Kan Chen, and Ram Nevatia, **CPARR: Category-based Proposal Analysis for Referring Relationships**, *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, pp. 4074-4083, 2020. [\[Paper\]](#)

Haidong Zhu, Jialin Shi, and Ji Wu, **Pick-and-Learn: Automatic Quality Evaluation for Noisy-Labeled Image Segmentation**, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 11769, pp. 576-584, 2019. [\[Paper\]](#)

Brian Matejek, Daniel Haehn, Haidong Zhu, Donglai Wei, Toufiq Parag, and Hanspeter Pfister, **Biologically Constrained Graphs for Global Connectomics Reconstruction**, *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 2089-2098, 2019. [\[Paper\]](#)[\[Code\]](#)

PROFESSIONAL ACTIVITIES

Reviewer:

- Conferences: ICME [2020-2022], BMVC [2020-], WACV [2021-], IROS [2021], AAAI [2022-], MICCAI [2022], ICPR [2022], ECCV [2022], CVPR [2023], ICCV [2023], EMNLP [2022].
- Workshops: MULA [2020-],
- Journals: IJCV [2021], T.MM [2022-], MM [2022], TPAMI [2022-]

TECHNICAL SKILLS

Deep Learning Framework Tensorflow, Keras, PyTorch, Theano, Caffe
Programming Language C/C++, Python, MATLAB, Mathematica, Verilog,

INTERNSHIP

Research Intern @ Microsoft, Redmond, WA, Advisor: Dr. Tianyu Ding May. 2023 - Aug. 2023
Applied Scientist Intern @ Amazon, Bellevue, WA, Advisor: Dr. Yuyin Sun May. 2022 - Aug. 2022
Research Intern @ Bytedance Inc., Mountain View, CA, Advisor: Dr. Ye Yuan May. 2021 - Aug. 2021
Visiting Researcher @ VCG, Harvard University, Cambridge, MA, Advisor: Prof. Hanspeter Pfister Jun. 2018 - Sept. 2018

RESEARCH EXPERIENCE

IRIS Computer Vision Lab, University of Southern California Los Angeles, CA
Research Assistant, Advisor: Prof. Ram Nevatia Aug. 2019 - present

- **Biometrics:** Identification with gait, body and other biometrics. [WACV 2023][IJCB 2023]
- **Skeleton Action Recognition:** Action recognition from skeleton sequences from videos. [ICPR 2022]
- **Sentiment Analysis:** Self-supervised sentiment classification with multimodal matching. [ICASSP 2022]
- **Query Grounding:** Object localization and referring based on the query relevant with the image. [WACV 2021, TAC 2020]
- **3D Vision:** Improved the performance of reconstruction of 3D representation with implicit function and neural radiance field. [ECCV 2020][CVPRW 2023]
- **Referring Relationship:** Relationship analysis for the objects detected in the same image. [CVPRW 2020]

Applied Science Group, Microsoft. Redmond, WA
Research Intern, Advisor: Dr. Tianyu Ding May. 2023 - Aug. 2023

- **Few-shot Generalizable NeRF:** Extending existing generalizable NeRF for few-reference view cases.
- **NeRF for Scene Editing:** Applying generalizable NeRF for scene editing with 3-D consistency.

Lab 126, Amazon. Bellevue, WA
Applied Scientist Intern, Advisor: Dr. Yuyin Sun May. 2022 - Aug. 2022

- **Multimodality NeRF:** NeRF reconstruction with multimodality input. [ICRA 2023]
- **Pointcloud registration:** Align and register different 3-D point clouds describing the same scene.

Intelligent Creation Lab, ByteDance Inc. Mountain View, CA
Research Intern, Advisor: Dr. Ye Yuan May. 2021 - Aug. 2021

- **Mesh Reconstruction:** Fine grained mesh for human body shape from single image. [ICPR 2022]
- **Clothing Network:** Automatic clothing network for 3-D human body shape with generation.

Multimedia Signal Processing Lab, Tsinghua University Beijing, China
Research Assistant, Advisor: Prof. Ji Wu Oct. 2018 - Jun. 2019

- **Noisy-labeled Image Segmentation:** Improved the performance of pixel-wise segmentation network while part of training samples are noisy-labeled. [MICCAI 2019]
- **Large-scale Biomedical Image Segmentation:** Set up a biomedical image segmentation system for biomedical images.

Visual Computing Group, Harvard University Cambridge, MA
Undergraduate Research Intern, Advisor: Prof. Hanspeter Pfister Jun. 2018 - Sep. 2018

- **3D segmentation:** Improved the 3D segmentation pipeline for connectomic projects and generated state-of-the-art result on the same quality of affinities compared with present methods, got 3rd place on SNEMI3D public dataset.
- **Graphs Reconstruction:** Set up graph improvement step for error correction in connectomic segmentation. [CVPR 2019]

i-Vision Group Beijing, China
Research Assistant, Advisor: Prof. Jiwen Lu Feb. 2018 - Apr. 2019

- **Metric Learning:** Applied hardness-aware strategy to improve efficiency and result of metric learning.
- **Point Cloud Reconstruction:** Investigated point cloud completion and autoencoder framework for 3D reconstruction.
- **Self-supervised Learning:** Applied self-supervision strategy as pretext for 3D point cloud classification.

COURSE PROJECTS

Structural Relational Reasoning for Point Clouds	Structural relational network for reasoning for point clouds.
Hardness-aware Deep Metric Learning	Automatically hard samples generation for metric learning.
Competition and Lecture Management System	Lecture management system with WeChat and website versions.
Video-audio Similarity Evaluation System	Evaluating similarity between given audio and visual fragments.
Online Big Data Face Recognition System	Real time face recognition with big data management.