

# 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, Yuyin Sun, Chi Liu, Lu Xia, Jiajia Luo, Nan Qiao, Ram Nevatia, and Cheng-Hao Kuo, **Multimodality Neural Radiance Field**, *Under review*.

Haidong Zhu, Wanrong Zheng, Zhaoheng Zheng, and Ram Nevatia, **Animatable Neural Radiance Field with Temporal Constancy and Uniqueness**, *Under review*.

Wanrong Zheng\*, Haidong Zhu\*, Zhaoheng Zheng, and Ram Nevatia, **GaitRef: Gait Recognition with Refined Skeletons**, (equal contribution) *Under review*.

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][Project][Code]

## PROFESSIONAL ACTIVITIES

Reviewer:

- Conferences: ICME [2020, 2021, 2022], BMVC [2020, 2021, 2022], WACV [2021, 2022, 2023], IROS [2021], AAAI [2022, 2023], MICCAI [2022], ICPR [2022], ECCV [2022], CVPR [2023], EMNLP [2022].
- Workshops: MULA [2020, 2021, 2022],
- 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

**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

- **Gait Recognition:** Identification with gait sequence. [WACV 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]
- **Mesh Reconstruction:** Improved the performance of reconstruction of 3D mesh from SDF value [ECCV 2020]
- **Referring Relationship:** Relationship analysis for the objects detected in the same image. [CVPRW 2020]

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

- **Multimodality NeRF:** NeRF reconstruction with multimodality input.
- **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 3<sup>rd</sup> 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

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

## AWARDS AND HONORS

<b>Outstanding Undergrad Thesis</b>	2019
<b>Scholarship for Academic Excellence</b>	2018
<b>3rd Place in SNEMI3D Challenge</b>	2018
<b>Scholarship for Social Practice Excellence</b>	2016/2017
<b>Scholarship for Voluntary and Public Excellence</b>	2016
<b>2nd Prize in Tsinghua Volunteer Activity</b>	2016