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

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*

SELECTED PUBLICATIONS

For the full pulication list, please refer to my Google Scholar.

1. 3-D Representation and Rendering
   - Haidong Zhu* *et al.*, **CaesarNeRF: Calibrated Semantic Representation for Few-shot Generalizable Neural Rendering**, *arXiv, 2023.*[Project][Paper][Code]
   - Haidong Zhu* *et al.*, **CAT-NeRF: Constancy-Aware Tx^{2}Former 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]
   - Yueqi Duan*, Haidong Zhu*, *et al.*, **Curriculum DeepSDF**, *European Conference on Computer Vision (ECCV), pp. 51-67, 2020.* (equal contribution) [Paper][Code]
2. Biometrics
   - Haidong Zhu *et al.*, **ShARc: Shape and Appearance Recognition for Person Identification In-the-wild**, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024.* [Paper]
   - Haidong Zhu* *et al.*, **GaitRef: Gait Recognition with Refined Skeletons**, *IEEE International Joint Conference on Biometrics (IJCB), 2023.* [Paper][Code]
   - Haidong Zhu *et al.*, **Gait Recognition Using 3-D Human Body Shape Inference**, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), pp. 909-918, 2023.*[Paper][Supp]
3. Vision and Language
   - Zhaoheng Zheng, Haidong Zhu, *et al.*, **CAILA: Concept-Aware Intra-Layer Adapters for Compositional Zero-Shot Learning**, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024.* [Paper]
   - Haidong Zhu *et al.*, **Self-supervised Learning for Sentiment Analysis via Image-text Matching**, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 1710-1714, 2022.* [Paper]
   - Haidong Zhu, *et al.*, **Utilizing Every Image Object for Semi-supervised Phrase Grounding**, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), pp. 2210-2219, 2021.* [Paper]
   - Chuanzi He, Haidong Zhu, *et al*, **CPARR: Category-based Proposal Analysis for Referring Relationships**, *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), pp. 4074-4083, 2020.* [Paper]
4. Biomedical Images Analysis
   - Haidong Zhu, *et al.*, **Pick-and-Learn: Automatic Quality Evaluation for Noisy-Labeled Image Segmentation**, *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), LNCS 11769, pp. 576-584, 2019.* [Paper]
   - Brian Matejek, Daniel Haehn, Haidong Zhu, *et al.*, **Biologically Constrained Graphs for Global Connectomics Reconstruction**, *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-now], WACV [2021-now], IROS [2021], AAAI [2022-now], MICCAI [2022], ICPR [2022], ECCV [2022], CVPR [2023-now], ICCV [2023], EMNLP [2022].
- *Workshops:* MULA [2020-now],
- *Journals:* IJCV [2021], T.MM [2022-now], MM [2022], TPAMI [2022-now]

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][WACV 2024]
- **Skeleton Action Recognition:** Action recognition from skeleton sequences from videos. [ICPR 2022]
- **Sentiment Analysis:** Self-supervised sentiment classification with multimodal matching. [ICASSP 2022]
- **Vision and Language:** Grounding and compositional learning. [WACV 2021, TAC 2020,WACV 2024]
- **3D Vision and Rendering:** 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. [arXiv]
- **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 3^{rd} 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.

TECHNICAL SKILLS

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

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.