

Zhimin Chen

+1(858) 319-6270 zhiminc@clmson.edu

◆ [Homepage](#) ◆ [Google Scholar](#) ◆ [GitHub](#)

EDUCATION

Clemson University Ph.D. in Automotive Engineering Advisor: Bing Li	Aug. 2020 - May. 2025
The Ohio State University Master of Electrical and Computer Engineering	Aug. 2018 - May. 2020
Northeastern University, China Bachelor of Electronic Engineering	Sep. 2014 - Jul. 2018

RESEARCH INTERESTS

I am primarily focused on studying computer vision and deep learning, with a particular emphasis on 3D self-supervised learning [2, 3, 4], 3D semi-supervised learning [5, 7], 3D detection/segmentation [1, 2, 4, 5], 3D zero-shot learning [1], and multi-modality learning [2, 3, 4, 7]. I am also interested in exploring the utilization of foundational models in 3D areas [3].

Technical Skills

- **Programming:** Python, C++, Linux/Unix, CUDA
- **Language:** English, Mandarin

RESEARCH EXPERIENCE

Clemson University, Research Assistant Aug. 2020 - Present

Finetuning Large ViT models for off-road semantic segmentation.

- Add ViT adapters on large-scale ViT model to fine-tune it on off-road segmentation tasks.
- Achieve SOTA performance on RELLIS-3D in 2D semantic segmentation task.

Zero-shot 3D Semantic Segmentation via Learning from Zero-shot Labels [1].

- Propose a novel approach to train the network with noise annotations obtained from existing zero-shot methods.
- Achieve SOTA performance on ScanNet in 3D zero-shot semantic segmentation task.

3D Self-supervised Learning via 3D to Multi-view Masked Autoencoder [2].

- Propose a 3D-to-2D generative pre-training method based on masked autoencoders to fully leverage the inherent multi-view properties of 3D data.
- Achieve SOTA performance in ModelNet40 and ScanObjectNN dataset in 3D object detection and classification tasks.

Multi-modal self-supervised learning based on foundation models [4].

- Propose a self-supervised 3D method named Bridge3D for 3D scene understanding based on multiple foundation models and masked autoencoders.
- Outperform SOTA methods by at most 10.3% in ScanNet, SUN RGB-D, and S3DIS datasets in both 3D object detection and segmentation tasks.

Class-level confidence based 3D semi-supervised learning [5].

- Propose a novel dynamic thresholding and resampling strategy based on class-level

confidence for 3D semi-supervised learning.

- Outperform the SOTA method by at most 5.9% in ModelNet40, ScanObjectNN, ScanNet, and SUN RGB-D datasets.

Prototype-based multi-modal semi-supervised learning [7].

- Propose a novel multimodal semi-supervised learning method by introducing consistency constraint and a multimodal contrastive prototype loss.
- Outperform SOTA methods in the ModelNet40 dataset by at most 4.7%.

3D Self-supervised learning for autonomous driving Data.

- Propose a self-supervised pretraining method for pillar or voxel-based 3D backbones in the Waymo dataset.
- Validate the performance of the pre-trained backbone in outdoor 3D object detection tasks.

Publications

Preprints

[1] **Zhimin Chen**, Yingwei Li, Longlong Jing, Liang Yang, Bing Li " Zero-shot 3D Semantic Segmentation via Learning from Zero-shot Labels" (2023). Submitted to CVPR 2024

[2] **Zhimin Chen**, Yingwei Li, Longlong Jing, Liang Yang, Bing Li " Point Cloud Self-supervised Learning via 3D to Multi-view Masked Autoencoder." (2023). Submitted to CVPR 2024

[3] Longlong Jing, **Zhimin Chen**, Bing Li, and Yingli Tian. "Self-Supervised Modality-Invariant and Modality-Specific Feature Learning for 3D Objects." (2021).

Publications

[4] **Zhimin Chen**, and Bing Li. "Bridging the Domain Gap: Self-Supervised 3D Scene Understanding with Foundation Models." Advances in neural information processing systems (NeurIPS). 2023.

[5] **Zhimin Chen**, Longlong Jing, Liang Yang, Yingwei Li, and Bing Li. "Class-Level Confidence Based 3D Semi-Supervised Learning." In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), pp. 633-642. 2023.

[6] Satya R. Jaladi, **Zhimin Chen**, Narahari R. Malayanur, Raja M. Macherla, Bing Li "End-To-End Training and Testing Gamification Framework to Learn Human Highway Driving." 2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC). IEEE, 2022.

[7] **Zhimin Chen**, Longlong Jing, Yang Liang, Yingli Tian, Bing Li "Multimodal Semi-Supervised Learning for 3D Objects." The British Machine Vision Conference (BMVC). 2021.