

Ziyao Zeng (Adonis)

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Summary

- Intern with Prof. Jianbo Shi at UPenn GRASP Lab; Prof. Xuming He at ShanghaiTech PLUS Lab
- Broadly interest in Computer Vision, especially 3D Perception and Cross Modality like Vision-Language and 2D-3D Vision

Educations

ShanghaiTech University

Sept. 2019 - (Expected) June 2023

B.Eng. in Computer Science, Major | Innovation and Entrepreneurship, Minor

- Overall GPA: 3.59/4.00, rank 37/166
- International Summer Program
- Entrepreneurial Mindshift Program

Osaka University | June 2022
Babson College | March 2021

Publications (*: equal contribution)

Can Language Understand Depth?

Renrui Zhang*, Ziyao Zeng*, Ziyu Guo, Yafeng Li | Mentor: Renrui Zhang, Ph.D. candidate at MMLab, CUHK

ACM Multimedia 2022 (Brave New Idea) | Link: <https://arxiv.org/abs/2207.01077>

- We are **the first** to conduct zero-shot adaptation from the semantic language knowledge to quantified downstream vision tasks and **perform zero-shot training-free monocular depth estimation**.
- Our **DepthCLIP** surpasses existing unsupervised methods and even **approaches the early fully-supervised networks**.

DSPoint: Dual-scale Point Cloud Recognition with High-frequency Fusion

Renrui Zhang*, Ziyao Zeng*, Ziyu Guo*, Xinben Gao, Kexue Fu | Mentor: Prof. Jianbo Shi, GRASP Lab, University of Pennsylvania

arXiv technical report, 2021 | Link: <https://arxiv.org/pdf/2111.10332.pdf>

- To deal with point cloud processing, we proposed DSPoint to **conduct dual-scale processing**: one by point-wise convolution for fine-grained geometry parsing, the other by voxel-wise global attention for long-range structural exploration.
- We design a co-attention fusion module for feature alignment to blend local-global modalities, which conducts inter-scale cross-modality interaction by **communicating high-frequency coordinates information**.

VT-CLIP: Enhancing Vision-Language Models with Visual-guided Texts

Renrui Zhang*, Longtian Qiu*, Wei Zhang, Ziyao Zeng | Mentor: Renrui Zhang, Ph.D. candidate at MMLab, CUHK

arXiv technical report, 2021 | Link: <https://arxiv.org/pdf/2112.02399.pdf>

- To improve downstream adaptation of Contrastive Vision-Language Pre-training (CLIP), we propose VT-CLIP to **enhance vision-language modeling via visual-guided texts**.
- Specifically, we **guide the text feature to adaptively explore informative regions on the image** and aggregate the visual feature by cross-attention.

Course Project

Twitter Emotion Classification (CS181 Artificial Intelligence)

Mentor: Prof. Kewei Tu, ShanghaiTech University | Link: https://adonis-galaxy.github.io/homepage/research/AI_CS181_project.pdf

Generalized DUQ: Generalized Deterministic Uncertainty Quantification (CS282 Machine Learning)

Mentor: Prof. Xuming He, PLUS Lab, ShanghaiTech University | Link: https://adonis-galaxy.github.io/homepage/research/ML_CS282_project.pdf

Seek Common while Shelving Differences: A New Way for dealing with Noisy Labels (CS280 Deep Learning)

Mentor: Prof. Xuming He, PLUS Lab, ShanghaiTech University | Link: https://adonis-galaxy.github.io/homepage/research/DL_CS280_project.pdf

Research / Working Experience

- **GRASP Lab, University of Pennsylvania** April 2021 - Present
-Mentor: Prof. Jianbo Shi | Project: DSPoint, Self-supervised Image Segmentation, Monocular 3D Object Detection
- **Shanghai AI Lab** Nov. 2021 - July. 2022
-Mentor: Renrui Zhang, Ph.D. candidate at MMLab, CUHK | Project: DepthCLIP, VT-CLIP
- **PLUS Lab, ShanghaiTech University** July 2020 - June 2021
-Mentor: Prof. Xuming He | Project: Mix-data Anomaly Segmentation, Noisy Labels Classification, Uncertainty Estimation
- **UISEE AI Lab, UISEE Technology** July 2021 - April 2022
-Algorithm Engineer | Develop point cloud recognition & monocular 3D object detection algorithm for self-driving cars
- **Shanghai Advanced Research Institute, CAS** Aug. 2020 - June 2021
-Intern Lecturer | Teaching advanced scientific topic to public, including deep learning and computer vision

Service

Reviewer: CVPR 2022 (Emergency reviewer, reviewing two papers)

Tutoring Experience

Freshman Mentor | Instructed by Prof. Rui Fan

2020 Fall – 2021 Spring

Awards / Competitions

Merit Student of ShanghaiTech University (Top 15%) 2021
State Grid AI Innovation Competition in Power Dispatch and Control (Top 10%, 24/242) 2021

Skills

Python, C/C++, PyTorch, Unity/C#, Bilingual (Chinese/English: CET6-607, GRE-327+4, TOEFL-103)