Sheng Zhang

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Education

University of Maryland, College Park Aug. 2024 – Present
Ph.D. in Computer Science, US Maryland *GPA: 3.97/4*
Advisor: Prof. Heng Huang

MBZUAI Aug. 2021 – Aug. 2024
Master of Science/Graduate Research Assistant, UAE Abu Dhabi
Advisor: Prof. Salman Khan; Co-advisor: Dr. Zhiqiang Shen

Research Interests

- Multimodal LLM, Vision-Language, Auto-Benchmark, Open-World Generalization, Concept Learning.

Selected Publications

1. Towards Realistic Zero-Shot Classification via Self Structural Semantic Alignment.
   ***Sheng Zhang**, Muzammal Naseer, Guangyi Chen, Zhiqiang Shen, Salman Khan, Kun Zhang, Fahad Khan.* AAAI 2024 (**Oral**). Paper Code.
2. PromptCAL: Contrastive Affinity Learning via Auxiliary Prompts for Generalized Novel Category Discovery.
   ***Sheng Zhang**, Salman Khan, Zhiqiang Shen, Muzammal Naseer, Guangyi Chen, Fahad Khan.* CVPR 2023. Paper Code.
3. GenFlowRL: Shaping Rewards with Generative Object-Centric Flow in Visual Reinforcement Learning.
   Kelin Yu, **Sheng Zhang***, Harshit Soora, Furong Huang, Heng Huang, Pratap Tokekar, Ruohan Gao.* ICCV 2025 (ICRA 2025 FMNS Workshop **Spotlight**, **Best Paper Nomination**) Paper.

Research Experience

Realistic Zero-Shot Classification with Vision-Language Learning Jan. 2023 – June. 2023
My individual research supervised by Prof. Salman Khan, Dr. Zhiqiang Shen, Prof. Fahad Khan. *MBZUAI, UAE*

➢ `Intro`: Formulated a novel problem, *Realistic Zero-Shot Classification*, which relaxes the *ideal vocabulary* assumption of the ground-truth target label set. Proposed a semantic structural alignment method in our framework with calibrated image-category alignments by leveraging Large Language Models.

- Adapted and reproduced multiple previous strong baselines to our setting for performance comparisons.
- Developed and benchmarked our method as SOTA performance on six generic and fine-grained datasets evaluated with transductive/inductive, unsupervised/semi-supervised, and out-of-vocabulary setups. In the standard setup, our method surpasses CLIP by over 20% absolute accuracies.

Generalized Novel Category Discovery June 2022 – Dec. 2022
My individual research and master thesis supervised by Prof. Salman Khan *MBZUAI, UAE*

➢ `Intro`: Proposed a visual prompt-based contrastive affinity learning framework to address the generalized category discovery problem, which aims to categorize both known and novel classes with known class annotations. Our method can learn semantic discriminative clusters via contrastive learning on diffused affinity graphs.

- Designed and implemented a novel visual prompt regularization technique to enhance backbone semantic discriminativeness. Demonstrated its superiority over naive visual prompt tuning.
- Achieved SOTA performance on seven challenging benchmarks including fine-grained StanfordCars and CUB, significantly surpassing previous methods, e.g., with nearly 11% cluster accuracy on CUB and 9% on ImageNet-100. Conducted further evaluations in transductive/inductive and few-annotation scenarios.

Academic Services

- Will serve as a PC member at NIPS 2025 workshop: *Data-centric Efficient Learning.*
- Received the NIPS 2024 Registration Award as a Top-8% Reviewer
- Delivered a presentation on our work *Towards Realistic Zero-Shot Classification* at AAAI'24
- Serving as a reviewer at NIPS, ICLR, ICML, CVPR, ICCV, ECCV, TMLR, IJCV, TIP, AISTATS, ACM Computing Surveys
- Serving as a conference volunteer at AAAI'24, EMNLP'23

Skills

Language: Chinese (native), English (fluent)
DL Tools: Pytorch, Transformers, Numpy, Triton