LoRA-Loop: Closing the Synthetic Replay Cycle for Continual VLM Learning

Supplementary Material

6. Detailed Results

Tab. 6 and Tab. 7 present the Detailed Transfer, Avg., and Last metrics for different continual-training methods across the MTIL benchmark in Order I and Order II, respectively. These results highlight the ability of each method to adapt to new tasks while preserving knowledge learned from earlier ones.

In Order I (Tab. 6), our method achieves the best performance across most columns. Compared with other baselines, i.e., ZSCL, MoE-Adapter, and GIFT, it delivers superior Transfer and Avg. metrics (69.8 vs. 69.7, 77.6 vs. 77.3), indicating its strong generalization across tasks. Its Last accuracy (86.0) also tops the chart, suggesting that it maintains the most robust performance after sequential training. In Order II (Tab. 7), LoRA-Loop similarly shows strong results across the Transfer, Avg., and Last metrics. Notably, it achieves the best Avg. (75.9) and Last (85.5) results, highlighting its ability to balance performance across both early and later tasks. Compared to other methods, LoRA-Loop demonstrates better resistance to catastrophic forgetting and maintains higher overall performance across the varied domains and data shifts introduced by the different ordering of tasks. These results collectively confirm that the proposed method maintains both strong plasticity for learning new tasks and high stability for preserving prior knowledge and zero-shot generalizability, making it highly effective across diverse and challenging continual VLM learning settings.

Table 6. Detailed Transfer, Avg., and Last accuracy (%) of different continual-training methods on the MTIL benchmark in Order I. * indicates reproduced results. The best score in each column is shown in **bold**.

Method	Aircraft	Caltech101	CIFAR100	DTD	EuroSAT	Flowers	Food	MNIST	OxfordPet	Cars	SUN397	Average
Zero-shot	24.3	88.4	44.6	54.9	71.0	88.5	59.4	89.0	64.7	65.2	65.3	65.3
Fine-tune	62.0	95.1	89.6	79.5	98.9	97.5	92.7	99.6	94.7	81.8	89.2	89.2
Transfer												
ZSCL [68]		86.0	67.4	45.4	**50.4**	**71.0**	87.6	61.8	86.8	60.1	66.8	68.1
MoE-Adapter [63]		87.9	68.2	44.4	49.9	70.7	**88.7**	59.7	89.1	**64.5**	65.5	68.9
GIFT* [56]		88.2	**69.9**	46.3	48.8	69.8	87.3	**69.2**	89.0	59.9	68.1	69.7
LoRA-Loop (Ours)		**88.4**	69.4	**46.6**	50.3	70.1	87.7	68.4	**89.5**	59.0	**69.8**	**69.8**
Avg.												
ZSCL [68]	45.1	92.0	80.1	64.3	79.5	81.6	**89.6**	75.2	88.4	64.7	68.0	75.4
MoE-Adapter [63]	50.2	91.9	**83.1**	**69.4**	78.9	**84.0**	89.1	73.7	89.3	**67.7**	66.9	76.7
GIFT* [56]	50.9	93.7	80.9	67.3	79.8	83.6	89.3	**80.1**	90.5	64.7	**69.3**	77.3
LoRA-Loop	**52.2**	**95.0**	81.2	67.5	**80.5**	83.7	89.5	79.6	**90.8**	64.0	69.2	**77.6**
Last												
ZSCL [68]	40.6	92.2	81.3	70.5	94.8	90.5	**91.9**	98.7	93.9	85.3	80.2	83.6
MoE-Adapter [63]	49.8	92.2	**86.1**	**78.1**	95.7	**94.3**	89.5	98.1	89.9	81.6	80.0	85.0
GIFT* [56]	47.8	94.1	81.3	73.7	96.7	**94.3**	91.5	**99.1**	**94.7**	85.9	80.3	85.4
LoRA-Loop (Ours)	**50.7**	**96.5**	81.8	74.4	**96.9**	94.1	91.5	**99.1**	94.4	**86.2**	**80.4**	**86.0**

Table 7. Detailed Transfer, Avg., and Last accuracy (%) of different continual-training methods on the MTIL benchmark in Order II. * indicates reproduced results. The best score in each column is shown in **bold**.

Method	Cars	Food	MNIST	OxfordPet	Flowers	SUN397	Aircraft	Caltech101	DTD	EuroSAT	CIFAR100	Average
Zero-shot	64.7	88.5	59.4	89.0	71.0	65.2	24.3	88.4	44.6	54.9	68.2	65.3
Fine-tune	89.6	92.7	94.7	97.5	97.5	81.8	62.0	95.1	79.5	98.9	89.6	89.2
Transfer												
ZSCL [68]		88.3	57.5	84.7	68.1	64.8	21.1	88.2	45.3	55.2	68.2	64.2
MoE-Adapter [63]		**88.8**	59.5	89.1	69.9	64.4	18.1	86.9	43.7	54.6	68.2	64.3
GIFT* [56]		88.3	64.2	88.9	**70.4**	68.2	22.5	90.1	46.2	52.8	69.1	66.1
LoRA-Loop (Ours)		88.4	**65.4**	**89.5**	70.3	**68.5**	**23.3**	**90.4**	**47.1**	**69.4**	**69.4**	**66.3**
Avg.												
ZSCL [68]	81.7	**91.3**	91.1	91.0	82.9	72.5	33.6	89.7	53.3	**62.8**	69.9	75.4
MoE-Adapter [63]	**84.9**	89.9	89.3	91.4	**86.2**	72.2	33.4	89.4	53.3	61.4	69.9	74.7
GIFT* [56]	83.5	91.0	92.7	93.1	85.9	74.4	35.7	92.0	54.4	60.8	70.7	75.8
LoRA-Loop (Ours)	83.3	91.1	**92.9**	**93.3**	86.1	**74.6**	**36.6**	**92.1**	**54.8**	59.5	**70.9**	**75.9**
Last												
ZSCL [68]	78.2	**91.1**	97.6	92.5	87.4	78.2	25.0	92.3	72.7	96.2	86.3	83.4
MoE-Adapter [63]	**84.1**	88.5	94.0	91.8	**94.1**	77.8	50.4	93.3	**77.1**	87.7	**86.6**	84.1
GIFT* [56]	81.1	90.3	98.6	94.2	91.7	78.8	50.8	**94.4**	75.5	95.3	**86.6**	85.2
LoRA-Loop (Ours)	81.1	90.5	**98.7**	**94.3**	92.9	**79.1**	**52.6**	93.9	74.8	**96.4**	86.5	**85.5**