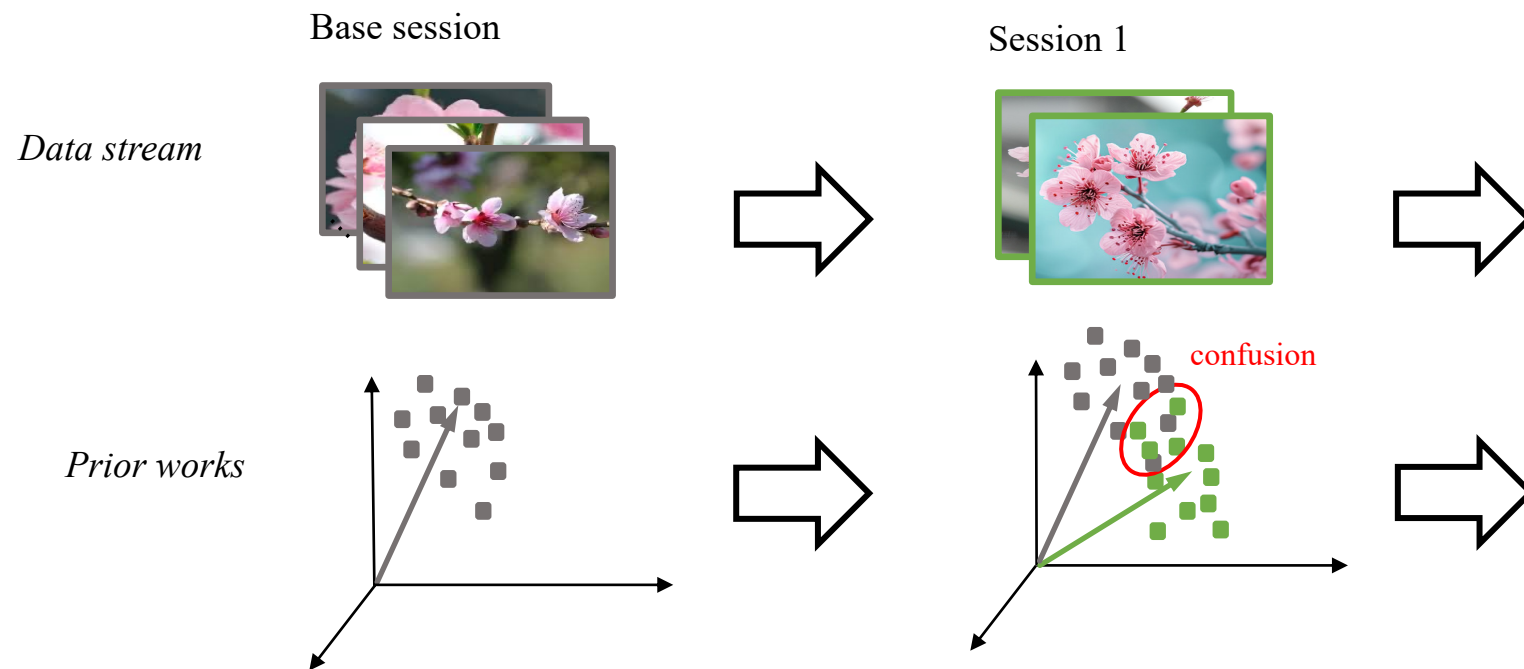


Prototype Antithesis for Biological Few-Shot Class-Incremental Learning

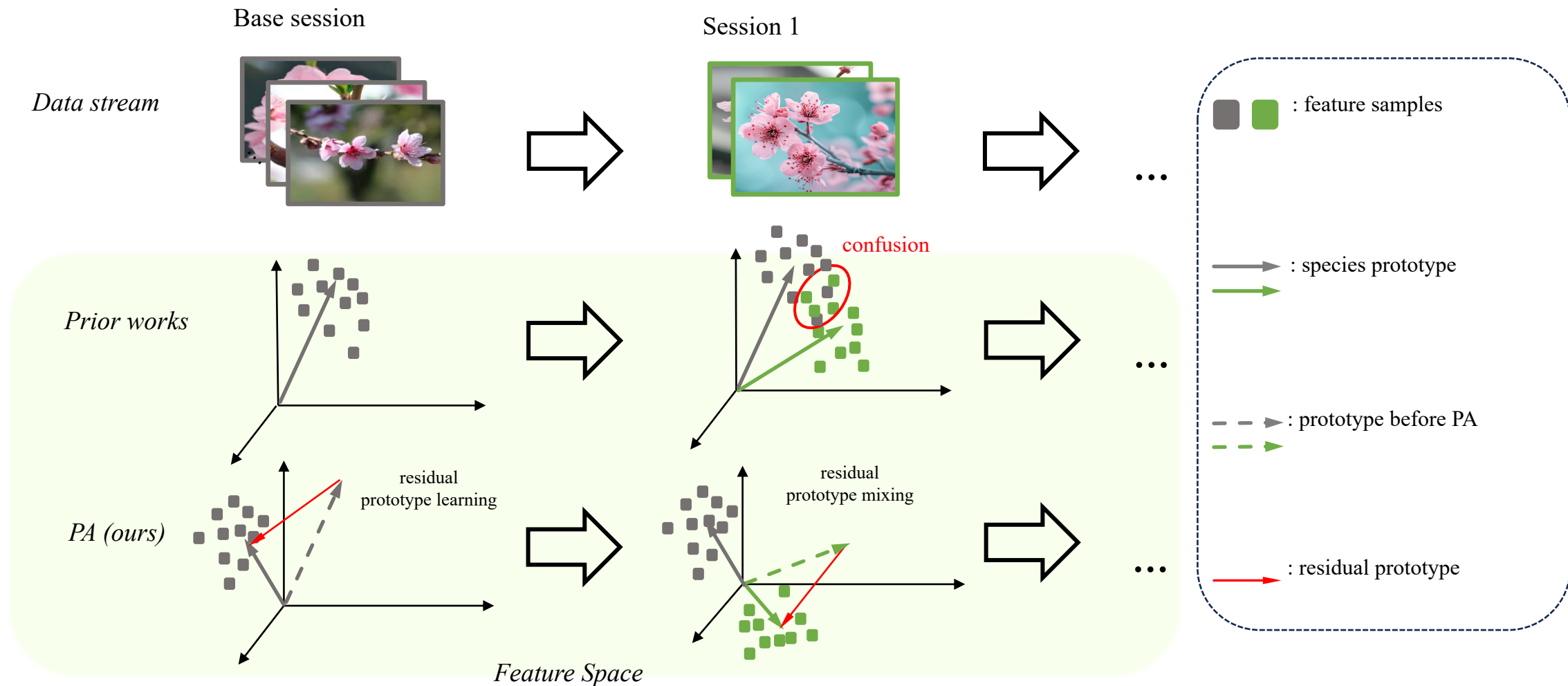
Authors: Binghao Liu, Han Yang, Fang Wan, Fei Gu

Affiliation: 1. DAMO Academy, Alibaba Group; 2. Hupan Lab; 3. University of Chinese Academy of Sciences

Motivation

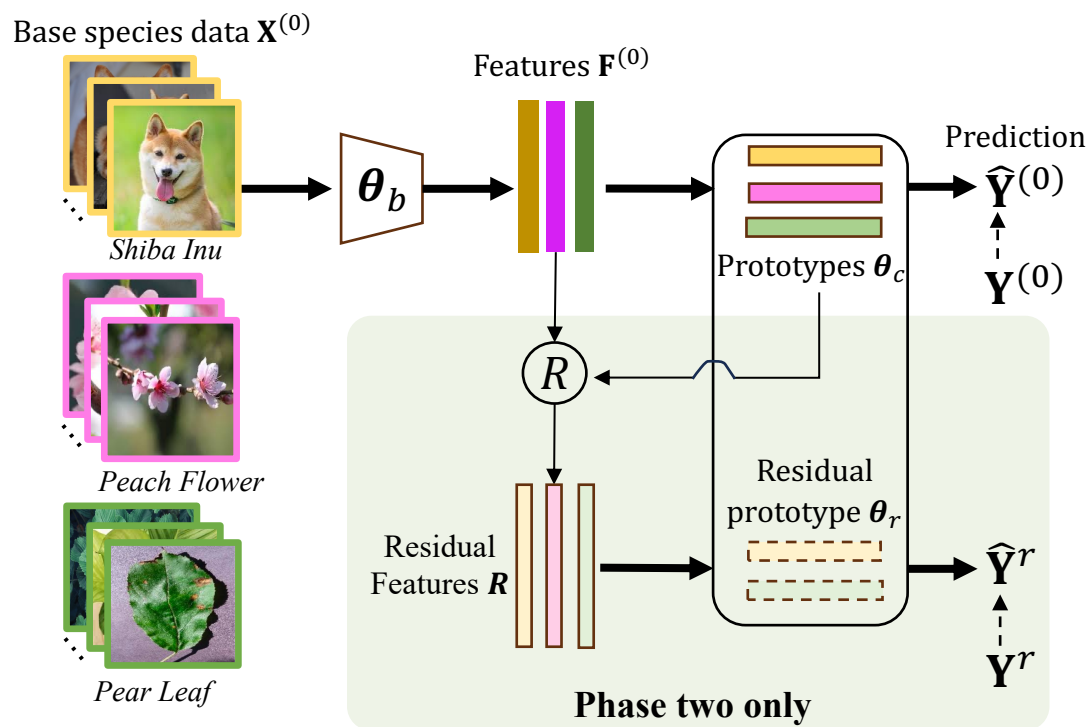


Motivation

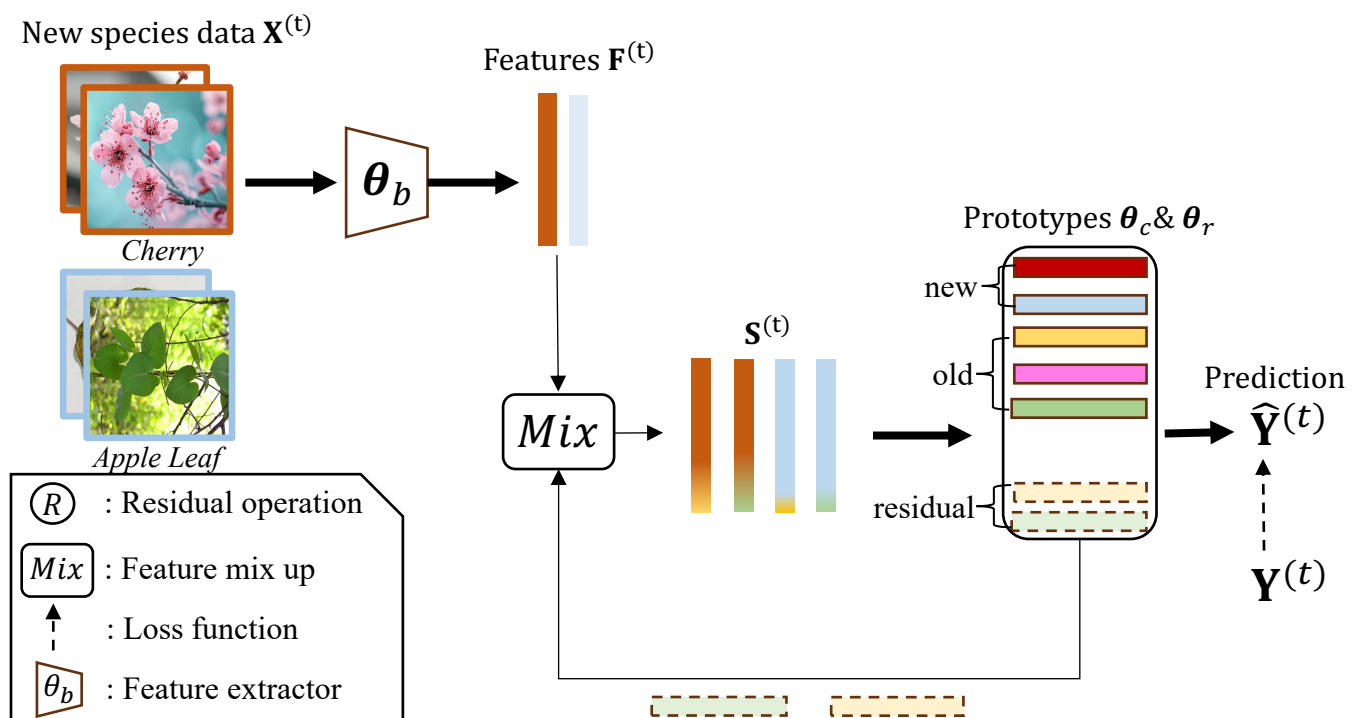


Method

Residual Prototype Learning (RPL)



Residual Prototype Mixing (RPM)



Experiments

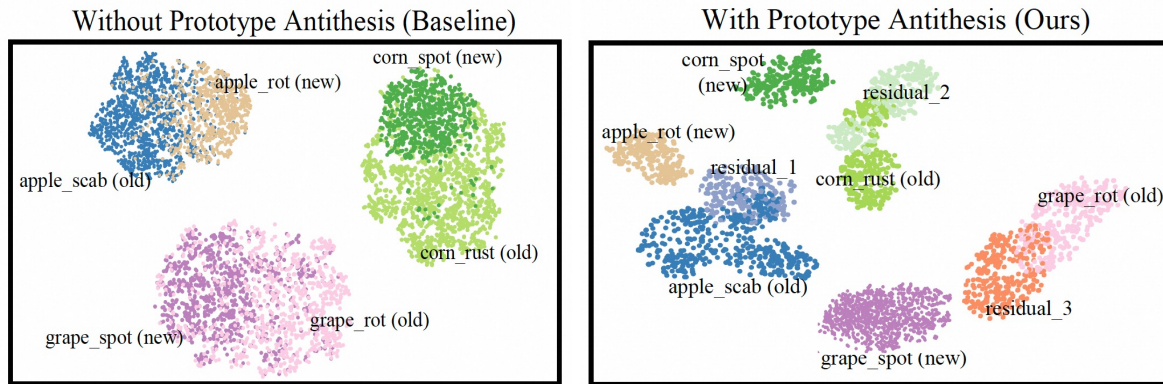


Fig. 1. Visualization of learned features

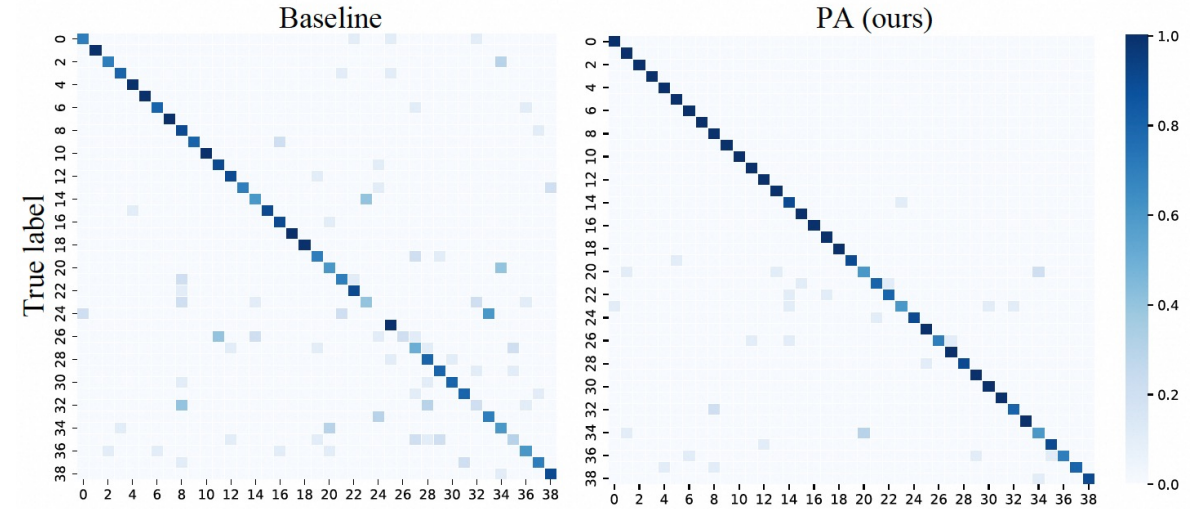


Fig. 2. Confusion matrices of old and new classes

Table 1. Performance on CUB200

Method	Accuracy in each session (%)												PD ↓
	0	1	2	3	4	5	6	7	8	9	10		
TOPIC Tao et al. (2020)	68.68	62.49	54.81	49.99	45.25	41.40	38.35	35.36	32.22	28.31	26.28	42.40	
SPPR Zhu et al. (2021)	68.68	61.85	57.43	52.68	50.19	46.88	44.65	43.07	40.17	39.63	37.33	31.35	
SFMS Cheraghian et al. (2021)	68.78	59.37	59.32	54.96	52.58	49.81	48.09	46.32	44.33	43.43	43.23	25.55	
FSL Mazumder et al. (2021)	72.77	69.33	65.51	62.66	61.10	58.65	57.78	57.26	55.59	55.39	54.21	17.38	
CEC Zhang et al. (2021)	75.85	71.94	68.50	63.50	62.43	58.27	57.73	55.81	54.83	53.52	52.28	23.57	
Meta-FSCIL Chi et al. (2022)	75.90	72.41	68.78	64.78	62.96	59.99	58.30	56.85	54.78	53.82	52.64	23.26	
FACT Zhou et al. (2022)	75.90	73.23	70.84	66.13	65.56	62.15	61.74	59.83	58.41	57.89	56.94	18.96	
SOFTNet Kang et al. (2023)	78.07	74.58	71.37	67.54	65.37	62.60	61.07	59.37	57.53	57.21	56.75	21.32	
WaRP Kim et al. (2023)	77.74	74.15	70.82	66.90	65.01	62.64	61.40	59.86	57.95	57.77	57.01	20.73	
BiDist Zhao et al. (2023)	79.12	74.99	70.87	67.30	65.89	63.45	61.40	60.11	58.61	58.23	57.48	21.64	
NC-FSCIL Yang et al. (2023)	80.45	75.98	72.30	70.28	68.17	65.16	64.43	63.25	60.66	60.01	59.44	21.01	
OrCo* Ahmed et al. (2024)	74.72	66.06	64.72	62.88	61.89	59.69	58.95	59.03	57.24	57.79	57.18	17.54	
TEEN Wang et al. (2024)	77.26	76.13	72.81	68.16	67.77	64.40	63.25	62.29	61.19	60.32	59.31	18.13	
PA(ours)	78.69	75.59	72.71	68.71	68.37	65.77	64.75	63.59	62.76	62.02	61.19	17.50	

Thank you!