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Figure 1 shows the updated MARCO framework, where the original N has been replaced by n for notational consistency per **Reviewer 3**'s suggestion. **Figure 2** presents the summary plots for Tables 2–4 of the original manuscript, as recommended by **Reviewer 2**. **Table 1** compares MARCO against the single-agent SOTA method *REMIT* using Top-N metrics across multiple cold-start settings. Finally, **Table 2** reports MARCO's robustness to varying embedding dimensions. These two tables are used to address the concerns raised by **Reviewer 3**.

Table 1: Overall results (HR@K, Recall@K, and NDCG@K) for three cold start scenarios. The best results are in boldface. Imp. (%) denotes the relative improvement over REMIT.

Cold Rate	Target	Metrics	REMIT	MARCO	Imp.(%)
20% Cold Start Rate	CD	NDCG@10	13.51 ± 0.15	**15.87 ± 0.06**	17.43
		HR@10	57.74 ± 0.40	**62.12 ± 0.13**	7.60
		Recall@10	5.72 ± 0.07	**6.70 ± 0.15**	17.23
		NDCG@20	16.51 ± 0.29	**19.33 ± 0.49**	17.07
		HR@20	79.91 ± 0.76	**83.60 ± 1.40**	4.62
		Recall@20	13.38 ± 0.37	**15.97 ± 0.29**	19.30
	MV	NDCG@10	15.84 ± 0.09	**17.86 ± 0.18**	12.73
		HR@10	62.23 ± 0.79	**69.75 ± 1.20**	12.07
		Recall@10	5.31 ± 0.17	**6.25 ± 0.13**	17.66
		NDCG@20	19.87 ± 0.31	**21.28 ± 0.26**	7.10
		HR@20	85.04 ± 1.44	**88.68 ± 1.26**	4.28
		Recall@20	12.13 ± 0.42	**13.45 ± 0.37**	10.86
50% Cold Start Rate	CD	NDCG@10	13.81 ± 0.25	**16.03 ± 0.17**	16.04
		HR@10	58.91 ± 1.11	**61.31 ± 0.43**	4.08
		Recall@10	6.18 ± 0.18	**7.59 ± 0.13**	22.90
		NDCG@20	17.10 ± 0.18	**19.18 ± 0.21**	12.13
		HR@20	79.87 ± 0.12	**82.18 ± 0.11**	2.89
		Recall@20	14.17 ± 0.10	**15.89 ± 0.20**	12.18
	MV	NDCG@10	14.35 ± 0.27	**16.82 ± 0.38**	17.25
		HR@10	56.42 ± 0.84	**66.11 ± 0.60**	17.18
		Recall@10	4.11 ± 0.21	**5.61 ± 0.28**	36.49
		NDCG@20	17.64 ± 0.35	**20.47 ± 0.40**	16.06
		HR@20	80.61 ± 0.12	**87.26 ± 0.23**	8.25
		Recall@20	10.18 ± 0.33	**13.19 ± 0.67**	29.67
80% Cold Start Rate	CD	NDCG@10	13.12 ± 0.38	**15.69 ± 0.47**	19.55
		HR@10	55.45 ± 1.13	**63.13 ± 1.00**	13.84
		Recall@10	5.80 ± 0.29	**7.60 ± 0.21**	31.11
		NDCG@20	16.06 ± 0.49	**19.00 ± 0.40**	18.32
		HR@20	77.44 ± 0.14	**83.44 ± 0.37**	7.75
		Recall@20	12.96 ± 0.41	**16.02 ± 0.33**	23.68
	MV	NDCG@10	13.52 ± 0.24	**15.46 ± 0.20**	14.37
		HR@10	57.41 ± 0.44	**63.88 ± 0.39**	11.26
		Recall@10	3.94 ± 0.14	**4.88 ± 0.22**	23.72
		NDCG@20	16.70 ± 0.64	**19.19 ± 0.38**	14.91
		HR@20	80.32 ± 0.50	**85.86 ± 0.23**	6.90
		Recall@20	9.78 ± 0.53	**11.86 ± 0.44**	21.37

Evaluation with Top-N metrics: The above table reports MARCO's performance against the single-agent SOTA baseline REMIT using Top-N metrics at cold-start rates of 20%, 50%, and 80% in both the CD and MV domains. MARCO consistently outperforms REMIT on all ranking measures. Across all cold-start scenarios, MARCO basically delivers relative gains of 15–19% in *NDCG@10*, 8–12% in *HR@10*, and 17–37% in *Recall@10*. Comparable improvements of 10–23% are observed for most of the @20 metrics (*NDCG@20*, *HR@20*, and *Recall@20*). These results demonstrate MARCO's robust and consistent advantage in Top-N recommendation across domains and cold-start rates.

Table 2: Performance of MARCO under different embedding dimensions (5, 10, 15).

Cold Rate	Target	Metrics	MARCO		
			EMB=5	EMB=10	EMB=15
20%	CD	MAE	0.749 ± 0.006	0.823 ± 0.007	0.815 ± 0.019
		RMSE	1.007 ± 0.009	1.087 ± 0.004	1.084 ± 0.031
	MV	MAE	0.856 ± 0.009	0.858 ± 0.004	0.894 ± 0.008
		RMSE	1.112 ± 0.001	1.109 ± 0.002	1.175 ± 0.010
50%	CD	MAE	0.815 ± 0.008	0.769 ± 0.011	0.896 ± 0.008
		RMSE	1.083 ± 0.003	1.022 ± 0.005	1.172 ± 0.019
	MV	MAE	0.882 ± 0.005	0.884 ± 0.008	0.893 ± 0.002
		RMSE	1.120 ± 0.007	1.125 ± 0.006	1.151 ± 0.007
80%	CD	MAE	0.835 ± 0.007	0.850 ± 0.008	0.886 ± 0.002
		RMSE	1.099 ± 0.001	1.126 ± 0.012	1.162 ± 0.003
	MV	MAE	0.892 ± 0.005	0.907 ± 0.010	0.951 ± 0.009
		RMSE	1.145 ± 0.001	1.174 ± 0.005	1.231 ± 0.007

Robustness against Embedding Dimensions: The above experiments evaluate MARCO's sensitivity to the pre–trained embedding dimension (5, 10, 15) across both CD and MV domains at cold–start rates of 20%, 50%, and 80%. We observe that MARCO's MAE and RMSE remain highly stable across all configurations. For instance, in the CD domain at 20% cold–start, MAE varies only from 0.749 to 0.823 and RMSE from 1.007 to 1.087. Across every setting, the maximum fluctuation in MAE does not exceed 0.127, and RMSE remains within a 0.15 range. Although EMB=10 achieves the best result in most cases, EMB=5 and EMB=15 perform comparably. These findings demonstrate that MARCO is robust to the choice of embedding dimension.

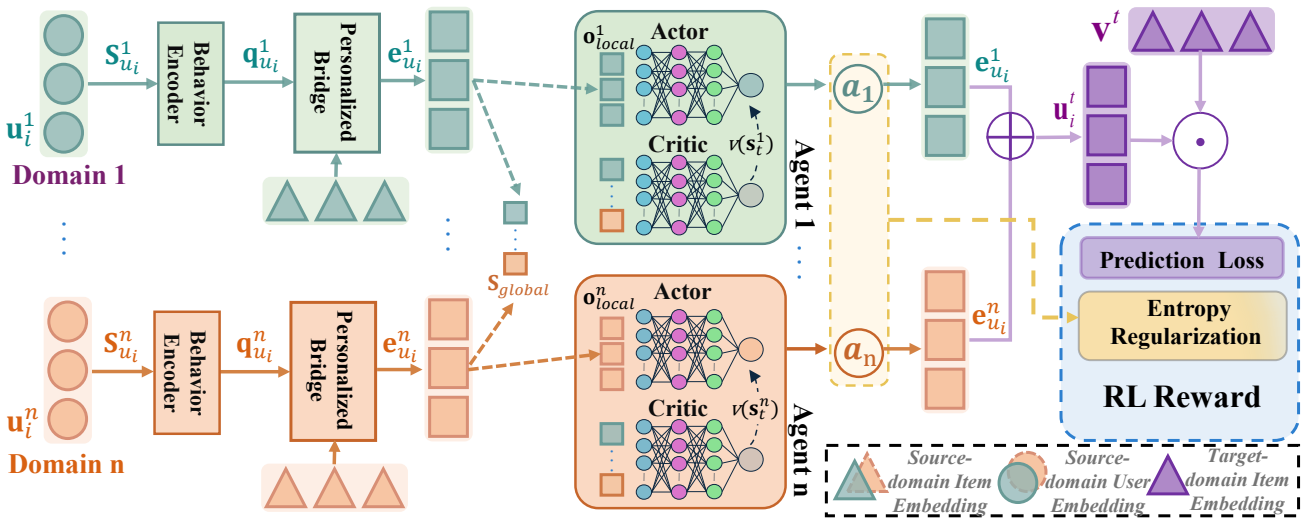

Figure 1: The updated overview of MARCO. The domain-specific user embeddings $\mathbf{u}_i^d$ and the sequence of item embeddings $\mathcal{S}_{u_i}^d$ are trained independently through Matrix Factorization (MF). Personalized bridge modules utilize MLP networks with encoded sequence embeddings $\mathbf{q}_{u_i}^d$ as input to generate personalized transformed domain-specific embeddings $\mathbf{e}_{u_i}^d$ for user u_i. To leverage the most informative and transferable knowledge from source domains, the Multi-agent Proximal Policy Optimization (MAPPO) framework with a cross-domain entropy term is adopted to determine the weight of domain-specific embeddings $\mathbf{e}_{u_i}^d$ and obtain the initial embedding $\mathbf{u}_i^t$ for the cold start user in the target domain to boost the recommendation performance.

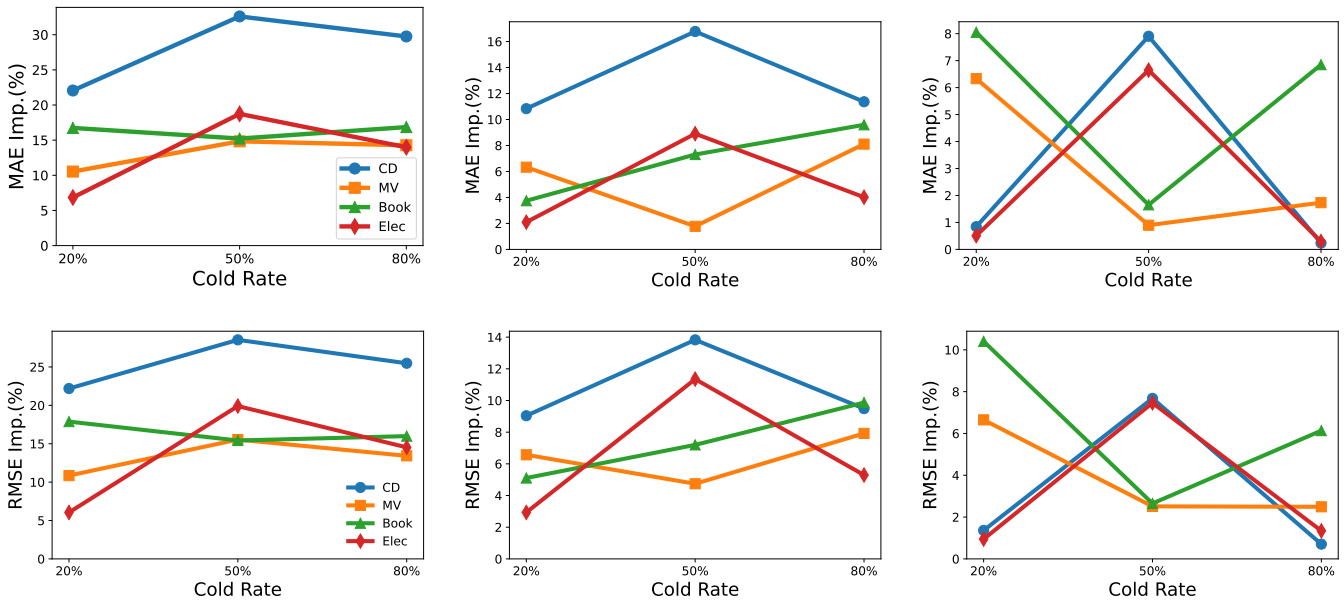

Figure 2: Summary plots for (i) the main comparison (original Table 2, left), (ii) the ablation study (original Table 3, center), and (iii) the effect of entropy regularization (original Table 4, right). The top row displays MARCO's relative MAE improvement (%) over the best baseline, while the bottom row shows its relative RMSE improvement (%).