基于位置纠偏的短视频推荐模型

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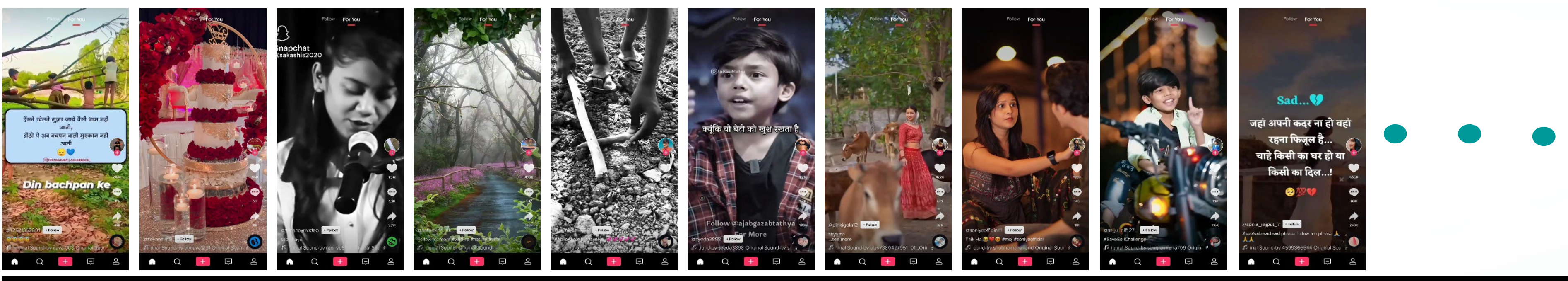
Improving Micro-video Recommendation by Controlling Position Bias

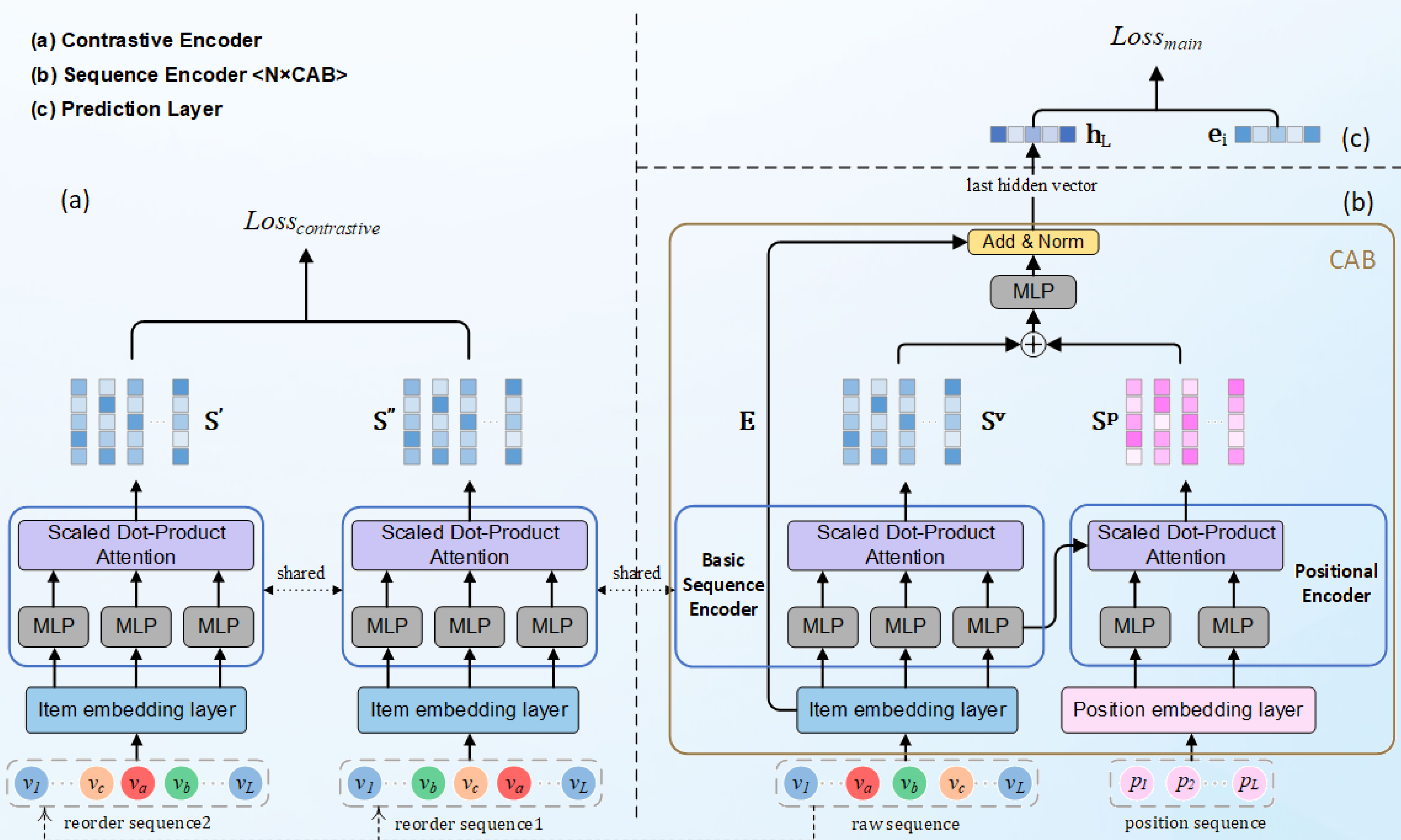ECML-PKDD 2022 (CCF B, CORE A)

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Motivation

- ☐ The playing order of micro-videos is designated by the platform, instead of a result that a user proactively chooses.
- ☐ The behaviors that a user browses micro-videos are driven by his/her interests, usually having no specific purposes.
- ☐ As a result, adjacent micro-videos in an interaction sequence have no strong inherent connections.

Model

- ☐ We take a divide-and-merge policy to generate sequence embeddings, i.e., employ different multi-head attention to model micro-videos and their positional information in the sequences, respectively and then aggregate them into sequence embeddings, which can reflect the actual role of micro-video positions.
- ☐ We construct semantically equivalent sequences by reordering operations for a given interaction sequence and present the reordering sequence loss for two newly-generated sequences, which can eliminate the implicit bias that the positional information brings out.
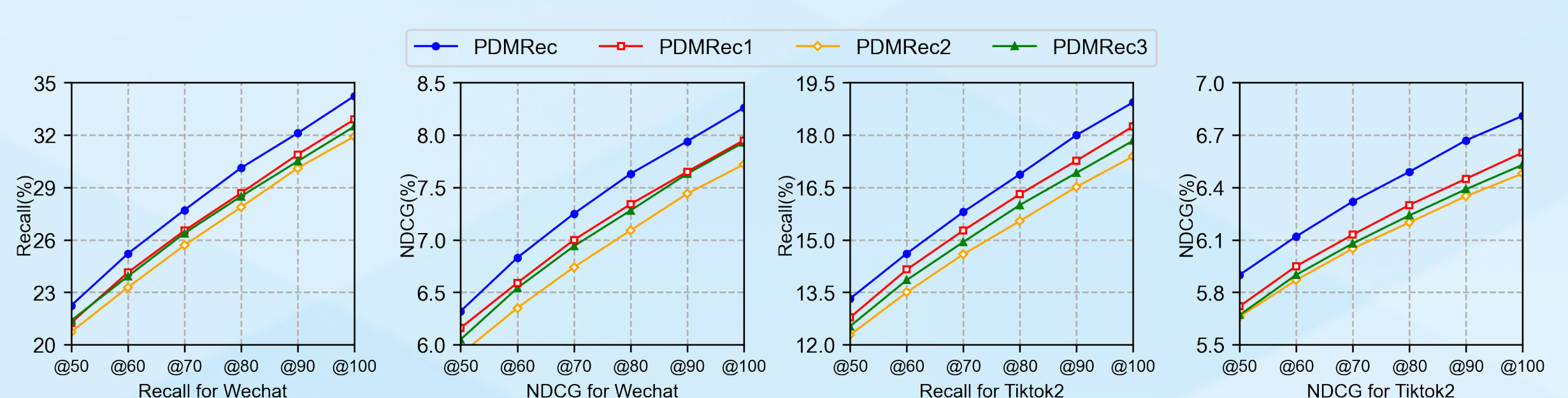

Experimental Evaluation

■ Performance Comparison

WeChat-Channels

Metrics		GRU4Rec*	STAMP	SASRec	BERT4Rec	CL4SRec	DuoRec	PDMRec	Improv. (%)
Recall	@20	0.1093	0.0888	0.1069	0.0892	0.1035	0.1108	0.1157	4.42%
	@50	0.2125	0.1727	0.2095	0.1762	0.2057	0.2169	0.2224	2.54%
	@100	0.3270	0.2647	0.3224	0.2744	0.3161	0.3263	0.3423	4.90%
NDCG	@20	0.0407	0.0339	0.0388	0.0322	0.0386	0.0410	0.0422	2.93%
	@50	0.0610	0.0504	0.0591	0.0494	0.0587	0.0619	0.0632	2.10%
	@100	0.0795	0.0652	0.0774	0.0654	0.0766	0.0796	0.0826	3.77%

TikTok

Metrics		GRU4Rec*	STAMP	SASRec	BERT4Rec	CL4SRec	DuoRec	PDMRec	Improv. (%)
Recall	@20	0.0514	0.0422	0.0777	0.0623	0.0727	0.0808	0.0830	2.70%
	@50	0.0979	0.0795	0.1240	0.1045	0.1177	0.1266	0.1332	5.20%
	@100	0.1547	0.1213	0.1752	0.1548	0.1698	0.1781	0.1894	6.34%
NDCG	@20	0.0205	0.0175	0.0475	0.0314	0.0432	0.0479	0.0491	3.55%
	@50	0.0297	0.0248	0.0566	0.0398	0.0520	0.0569	0.0590	3.69%
	@100	0.0388	0.0316	0.0645	0.0479	0.0604	0.0653	0.0681	4.29%

■ Ablation Study

PDMRec1 and PDMRec2 are PDMRec models which remove the contrastive encoder and the positional encoder, respectively. PDMRec3 is the PDMRec model which removes the positional encoder but adopts the addition of item embedding and positional embedding as the input of the model.