KDD Cup 2022 Workshop Presentation

MIRA

Query-Product Ranking
Team GraphMIRAcles

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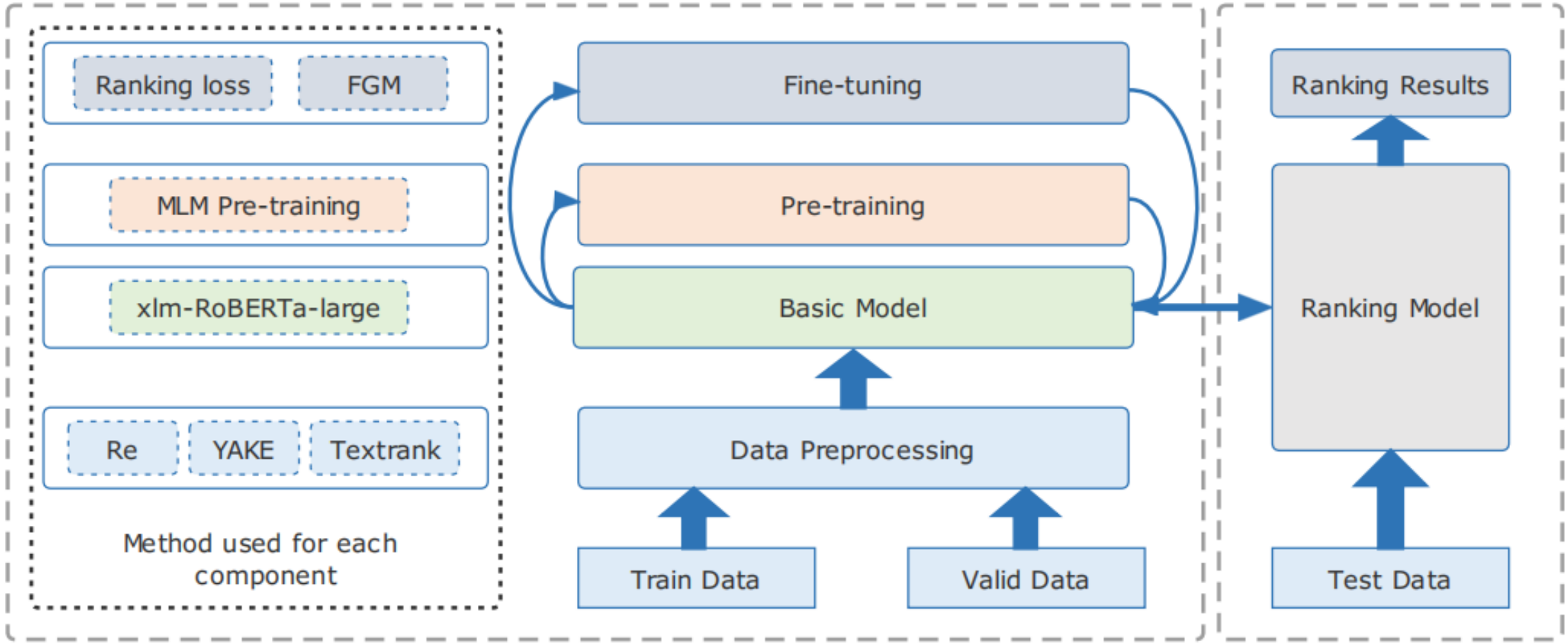
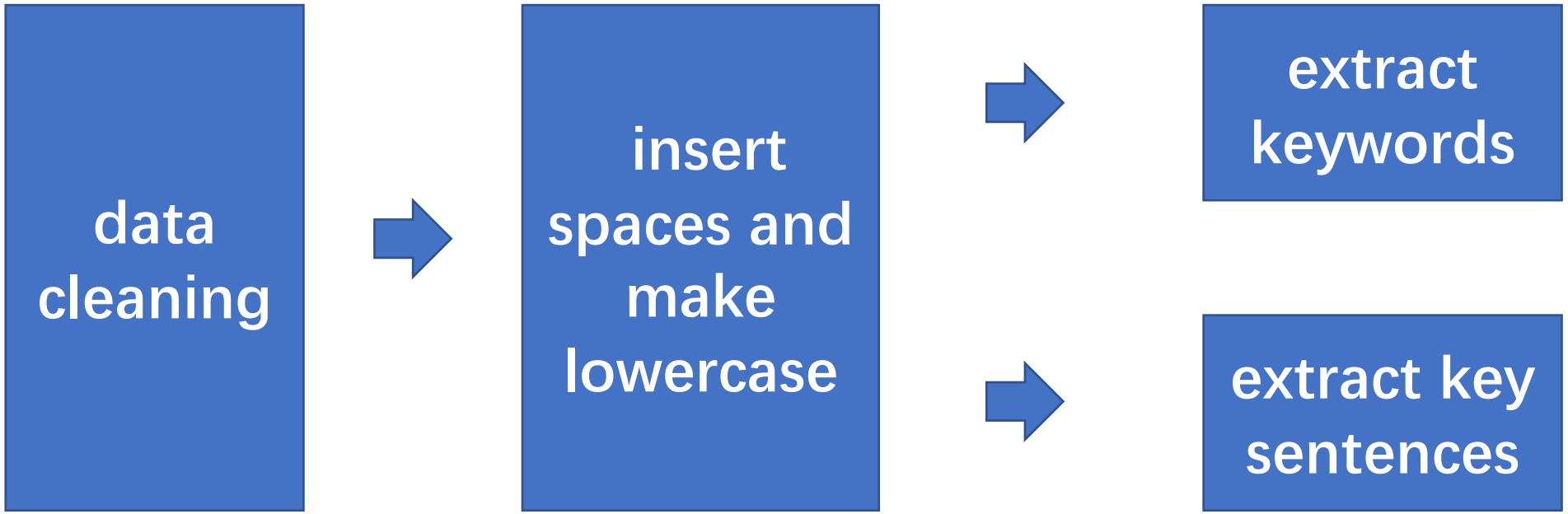
01 Method

Overall Architecture



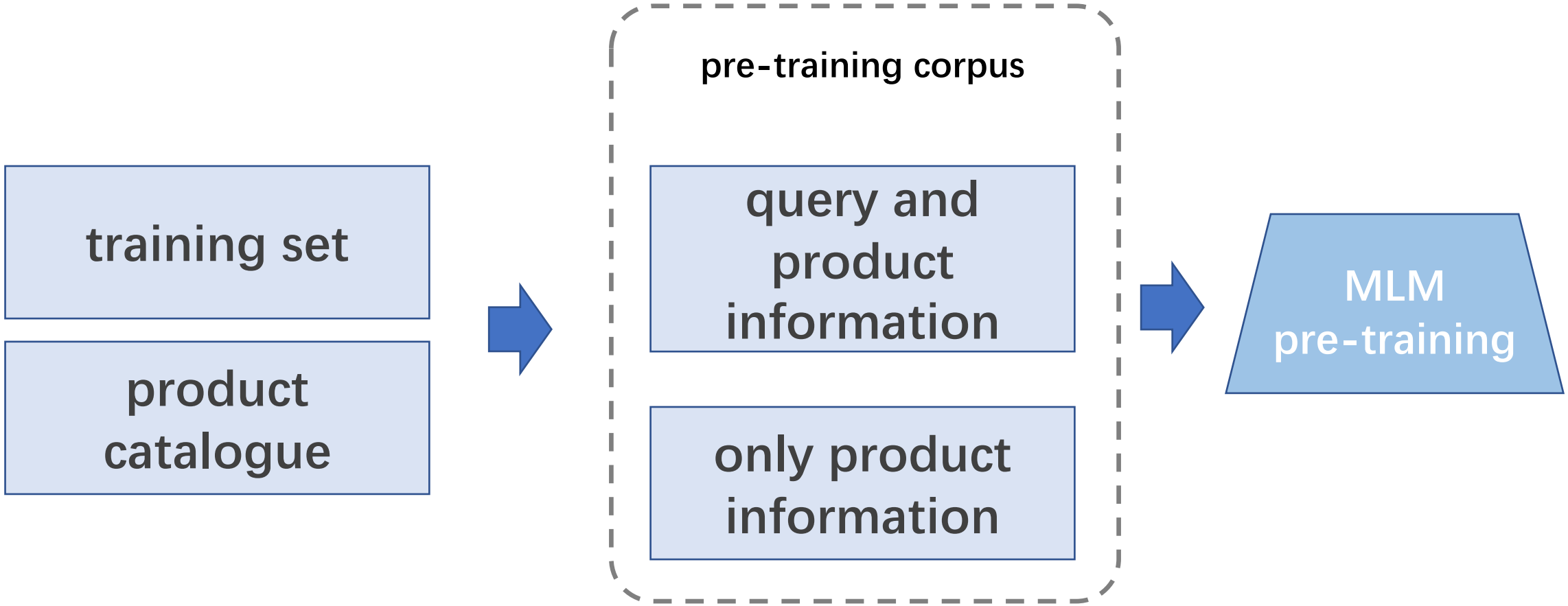
01 Method

Data preprocessing



01 Method

Pre-training



01 Method

Fine-tuning

$q =$ "iPhone 11"

$p_1 =$ "iPhone 11", $y(q, p_1) = 1$

$p_2 =$ "iPhone 10", $y(q, p_2) = 2/3$

$p_3 =$ "charger", $y(q, p_3) = 1/3$

$p_4 =$ "television", $y(q, p_3) = 0$

Fine-tuning target

$$f(q, p_1) > f(q, p_2) > f(q, p_3) > f(q, p_4)$$

Where q means query, then p is the product corresponding to q, and $y(q, p_i)$ is the label of p_i corresponding to q, 1, 2/3, 1/3, and 0 correspond to Exact, Substitute, Complement, and Irrelevant respectively.

Where $f(q, p_i)$ is the output score of the model for the input of q and p_i.

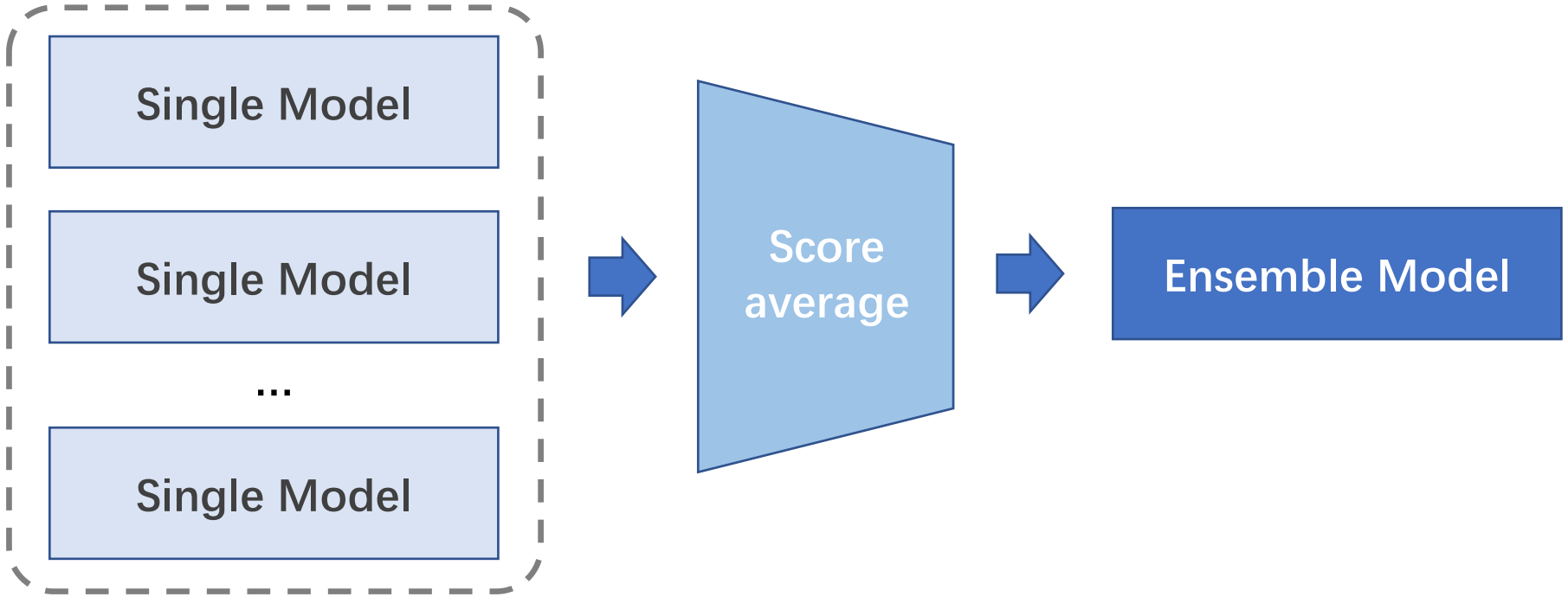
ranking loss and FGM

02 Results

Basic model	Model settings	nDCG (valid)
xlm-Roberta-large	Re	0.8958
xlm-Roberta-large	Dp + Re	0.8963
xlm-Roberta-large	Dp + Pt + Re	0.8993
xlm-Roberta-large	Dp + Pt + Ra	0.9012
xlm-Roberta-large	Dp + Pt + Ra + FGM	**0.9018**

Experiment results of different model settings.
Re: Regression loss; Dp: Data preprocessing; Pt: MLM pre-training;
Ra: Ranking loss; FGM: FGM adversarial training.

02 Results



Model	nDCG (private test)
Single Model	0.9002
Ensemble Model	**0.9028**

Ranking on the leaderboard

--->top 10

--->top 4

04 Conclusion

1. Experiments demonstrate that all three components of our method are effective.

2. The addition of pre-training makes the performance of the model more obvious than other components.

04 More Information

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MANY THANKS !