An Interpretable Model With Forgetting Matrix For Deep Knowledge Tracing

Quanlong Guan
Jinan University, Guangzhou, Guangdong, China

Kaiquan Bian
Jinan University, Guangzhou, Guangdong, China

Liangda Fang
Jinan University, Guangzhou, Guangdong, China

Sheng Li
Jinan University, Guangzhou, Guangdong, China

Zhenyu He
Jinan University, Guangzhou, Guangdong, China

Hua Zheng
Jinan University, Guangzhou, Guangdong, China

Lusheng Wu
Jinan University, Guangzhou, Guangdong, China

Weiqi Luo
Jinan University, Guangzhou, Guangdong, China

Abstract

Given that the current knowledge tracking model still has problems such as insufficient interpretability of the knowledge forgetting process and ignoring the relationship between different topics with the same knowledge concept. we propose an interpretable knowledge tracing model (KVFKT) based on key-value and forgetting. This approach keeps trace of the students' knowledge state matrices in each memory unit and also keeps trace of the forgetting matrices to monitor when the students' knowledge concepts were last reviewed. In addition, this model introduces the IRT two-parameter model from the perspective of educational psychology to further enhance the interpretability of the model. Finally, four real-world datasets are used to test the model, experimental results show that KVFKT can better trace students' knowledge state and outperforms existing models in terms of ACC and AUC.

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