Exercise recommender system based on knowledge graph and knowledge modeling

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Overview

Introduction
- Background
- Basic Methodology

Knowledge graph
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Background

The educational method of teaching students in accordance with their aptitude has a history of more than 2,000 years in our country, but in the context of our country's exam-oriented education, it is really easy to say that it is difficult to formulate a personalized learning plan based on students' different cognitive levels, learning abilities and their own qualities. When traditional thinking is combined with cutting-edge technology, the feasibility of teaching students in accordance with their aptitude has been greatly improved. After the intervention of AI, there are two ways to achieve personalized learning.

Basic Methodology

- Analyze content and build a knowledge graph.
- Adaptive learning to realize intelligent recommendation.

Knowledge graph[1]

Figure: KG research fields

KG Completion

Alberto et. all utilized recurrent neural networks to learn time-aware representations of relation types which can be used in conjunction with existing latent factorization methods.[1]
Yao et. all introduced the work of knowledge base completion. Combined with the pre-training model BERT, it can integrate richer context representation into the model, and achieve SOTA effects in tasks such as triple classification, link prediction, and relationship prediction.[2]

Cognitive Diagnosis

Wang et. all proposed neural cognitive diagnosis method for intelligent education system. [3]

Knowledge Tracing

- Individualized Bayesian Knowledge Tracing Models[4]
- Deep Knowledge Tracing[5]
- Tracking Knowledge Proficiency of Students with Educational Priors[6]

[3]

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