
Extended Abstract of Task 4 For NeurIPS Education Challenge 2020

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Abstract

Task 4 aims at providing personalized questions for students so that we can diagnose their knowledge mastery states quickly and precisely, which has been a well-formed educational problem called *Computerized Adaptive Testing*(CAT for short).Therefore, we exploit the educational domain knowledge and establish an *Adaptive Testing System* (ATS) to solve the challenge. The ATS consists of a cognitive diagnosis model and a question selection strategy. With abundant experiments, we finally employ the Item Response Theory (IRT) as the cognitive diagnosis model, and the Maximum Fisher Information (MFI) as the question selection strategy. In general, IRT models the knowledge state of a student with an ability parameter θ , and MFI selects the questions which minimize the variance of student ability parameters as the most informative questions. To enhance the robustness of the ATS, we additionally ensemble the final prediction with other models, such as Neural Cognitive Diagnosis Model (NCDM), Collaborative Filtering (CF), etc. In the end, our framework achieves AUC 0.7015 and 0.7032 on the public and private leaderboards respectively, which shows both performance and robustness.