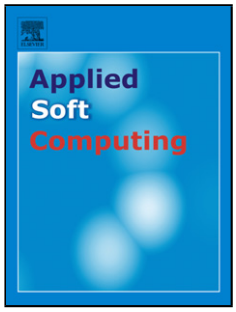

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Assessment of Skills and Adaptive Learning for Parametric Exercises Combining Knowledge Spaces and Item Response Theory

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HIGHLIGHTS

- New skill modelling algorithms are proposed that combine KS and IRT
- Good prediction accuracy for student ability is obtained with RMSE values under 0.35
- Prediction of student ability can be used for content adaptation in computer systems
- There is a trade-off between accuracy and time performance for the algorithms

ABSTRACT

Many computer systems implement different methods for the estimation of students' skills and adapt the generated exercises depending on such skills. Knowledge Spaces (KS) is a method for curriculum sequencing but fine-grained decisions for selecting next exercises among the candidates are not taken into account, which can be obtained with the application of techniques such as Item Response Theory (IRT). The combination of KS and IRT can bring advantages since the semantics of both models