Towards Adaptive Generation of Mathematical Exercises

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Abstract

This article presents a new approach for teachers to adaptive generation of self-evaluation exercises according to the profile of students. It allows the creation of different exercises (Direct exercises, Complex exercise...). Each type mathematical exercise helps to give an evaluation in various concepts. The author approach consists of three phases: pre-test phase, filtering phase and evaluation phase. The first phase is devoted to determining the level of mastery of the learner about basic notions by updating the ontology profile using the rating obtained for each notion (concept). For the second phase, filter concepts is carried out by keeping the well mastered concepts. For the last phase, it is for the generation of extended exercise model (high difficulty) based on all the possible combination of concepts mastered. The ability to generate several exercises from the same model allows the learner to evaluate several times on the same concepts without the teacher having to repeatedly define many exercises.

References
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Index Terms

Computer Science

Applied Mathematics

Keywords
Adaptive generation of exercises; authoring tool; Self-evaluation; automatic evaluation.