

An intelligent Item Banking System for setting of quality question papers

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Computer-aided paper setting has been a relatively new area in education. This is a multidisciplinary area comprising of Psychometrics, Item Banking and Computer Science. The current Item Banking systems are based on Item Response Theory (IRT) for analysis of items while Database technology from computer science is used for storing of analysed items. The computer systems based on IRT and Database technology are not adequate for composing of high quality examination papers, but necessary for storing of analysed items. This paper presents our approach to exploit Artificial Intelligence Techniques for supporting the intelligent composing of quality examination papers.

The system has been developed as an Expert system, which emulates the role of experienced paper setter. It accepts Table of Specification for an examination paper as the main input to the system. The setter is allowed to request items covering various topics, units and sub units of a particular subject. It is also facilitated to input specifications for items in terms of classification of hierarchical levels, facility index and discrimination index. Various heuristic supports are provided to assist the specification process. Upon the specification, the system shows the content validity of the papers to be produced. At this stage user can either proceed to compose papers or modify the specification. The selected items for composing a paper will be filtered using Artificial Intelligent technique called Genetic Algorithms for ensuring the composing of an optimal set of high quality papers. The system has ability to show summary of alternative versions of papers generated together with item parameters; consistency (through "beta-value"), facility index, discrimination index and hierarchical level percentage. Display of statistics of the item bank, usage of items, printing of papers and updating of item bank are also implemented. The system has been implemented and tested as a part of Secondary Education Modernization Project and now ready to use for paper setting for national level examinations. The system can also be customized to use for setting of other standard papers.

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