

Reusing Assessments Tests by Generating Arborescent Test Groups Using a Genetic Algorithm

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Abstract : Using Information and Communication Technologies (ICT) notions in education and three basic processes of education (teaching, learning and assessment) can bring benefits to the pupils and the professional development of teachers. In this matter, we refer to these notions as concepts taken from the informatics area and apply them to the domain of education. These notions refer to genetic algorithms and arborescent structures, used in the specific process of assessment or evaluation. This paper uses these kinds of notions to generate subtrees from a main tree of tests related between them by their degree of difficulty. These subtrees must contain the highest number of connections between the nodes and the lowest number of missing edges (which are subtrees of the main tree) and, in the particular case of the non-existence of a subtree with no missing edges, the subtrees which have the lowest (minimal) number of missing edges between the nodes, where a node is a test and an edge is a direct connection between two tests which differs by one degree of difficulty. The subtrees are represented as sequences. The tests are the same (a number coding a test represents that test in every sequence) and they are reused for each sequence of tests.

Keywords : chromosome, genetic algorithm, subtree, test

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