COMPUTERIZED ADAPTIVE TEST DESIGN AND IMPLEMENTATION BASED ON ITEM RESPONSE THEORY IN LEARNING MANAGEMENT SYSTEM MOODLE

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ABSTRACT

The development of technology in education for testing purpose in the future will adopt an adaptive test. Computer Adaptive Test (CAT) is one solution to realize an automatic and efficient one. Using CAT, a high ability student will be given a relatively difficult problem. While students with less ability will be given the relatively easy one. This final project design and implement the CAT module is applied to the Learning Management System (LMS) Moodle. The application’s form will be a Moodle module and can be accessed after creating a course. The reason using Moodle LMS is due to its open source and its one of the most widely used in the world. In addition, currently e-learning system on ITS (Institut Teknologi Sepuluh Nopember) also use Moodle.

CAT Module on this final project adopts the algorithm of Item Response Theory (IRT) with three parameters. These parameters is difficulty parameter, guessing parameter, and discrimination parameters. To estimate the ability of student, this module use Maximum Likelihood (MLE) methods. As for determining the stopping rule, the test will use a combination of time limits, fixed length and variable length. For variable length, the value of standard error can be set on the adaptive test option.

Keyword : CAT, IRT, MLE, and Stopping Rule