

Statistical Analysis of Educational Testing Data based on SCILAB

Long Abstract

Shanping You , Yan Chen, Xiaoyao Xie*, Member IEEE

In China, there are several millions even more than ten million people to participate in various tests every year. Just in Guizhou province, there are more than 250,000 students participate in the college entrance examination every year. In middle schools, there are about 1 million students to participate in terminal examinations each semester. However, until now does not have a good tool in the middle school to analysis the testing data.

In large-scale education tests, the testing data statistical analysis may provide the science, the reasonable basis for the education decision-making. Realizes under the open source environment using the science computation software to the test data carries on the statistical analysis computation, not only may reduce the cost, moreover can obtain calculates the platform reliably.

SCILAB is a free scientific software package for numerical computations providing a powerful open computing environment for engineering and scientific applications. SCILAB is an open source software. Since 1994 it has been distributed freely along with the source code via the Internet. It is currently used in educational and industrial environments around the world. SCILAB includes hundreds of mathematical functions with the possibility to add interactively programs from various languages (C, C++, Fortran...). It has sophisticated data structures (including lists, polynomials, rational functions, linear systems...), an interpreter and a high level programming language. SCILAB is quite similar to MATLAB, and the range of functions are comparable. The largest benefit of SCILAB is of course that it is free. Also, SCILAB is easy and fast to install.

In this paper, we use scientific computing software SCILAB to analysis the educational testing data, mainly focus on data distribution, data grouping, mean and standard deviation, standard distribution, Item difficult, Degree of Confidence, Item discrimination, the result of computing are discussed.

Section 2 introduces the theory and method of statistical analysis of educational testing data.

Including data distribution, data grouping, mean and standard deviation, standard distribution, Item difficult, Degree of Confidence, Item discrimination.

Section 3 gives the result of computing. Some results of this is presented in behind.

Section 4 concludes this paper.

Index Terms—Educational testing data; SCILAB; Statistical analysis

Manuscript received Jul. 7, 2009. This work was supported in part by National High Technology Research and Development Program (863 Project) of China under Grant 2007AA010609, in part by Industry Research Project of Guizhou Province, China under Grant 20083009, and in part by Young Teacher Scientific Research Expansion Funds of Guizhou Normal University under Grant 2007-1-25.

Shanping You is with the School of Computer Science and Technology, Guizhou University, Guiyang, 550025 China ,and with the Key Laboratory of Information and Computing Science of Guizhou Province, Guizhou Normal University, Guiyang, 550001 China (e-mail:youshanping@sina.com).

Yan Chen is with the Key Laboratory of Information and Computing Science of Guizhou Province, Guizhou Normal University, Guiyang, 550001 China.

Xiaoyao Xie is with the Key Laboratory of Information and Computing Science of Guizhou Province, Guizhou Normal University, Guiyang, 550001 China (corresponding author. phone: 86-851-6702016; fax: 86-851-6702016; e-mail:xyx@gznu.edu.cn).

Some results of Analysis:

