

**LANG -F -301**

**Academic English II**

**Game-Theoretic Question Selection for Tests**

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**Abstract**

Today when you want to test someone knowledge you can make a test, but when you have to test more people making a test is harder. The test is not efficient anymore because the test are passed at different moment and the questions are no longer secret. This happen a lot on the internet with MOOC ( Massive Online Open Course ). Thus this kind of large scale test are not really able to test someone accuately. In this article we are going to discuss about different solutions about this probelm.

**Summary**

Now we are going to talk about experiments that will show how the optimal test strategy outperforms simple test strategies like choosing random questions. For each experiments we have three parameters, the number of questions, the number of test takers types ( a type of test taker define what questions are hard for him ). In order to compare scored test to binary test the binary test will be translated to a scored test with question that have a score of 1. The fisrt experiment will be about single-question test, for those experiments we use 5 different algorithms, general LP, marginal-probability, scored-test LP, network-flow, and Push-Relabel. For every case each algorithms create 5 game instances, and we put the average running time on a graph. We can see on the graph that push-relabel is the best overall algorithms for the single-question test.

The second experiments will use the same algorithms but with multiple-questions test, and will generate 50 instances for each case and put the average on the graph. The results of the test show that all the algorithms have advantage. The scored test algorithm will run faster when the number of question is higher, but the general LP is more efficient when the number of test taker type is higher.

**Bibliography**

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