ON ESTABLISHING FUZZY CONSTRAINTS FOR THE PROBLEM OF OPTIMIZING AMOUNT OF GROUPS FOR SELECTIVE EDUCATIONAL COURSES

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Automated enrollment of students on optional disciplines is regarded as an inherent part of the educational process in many Universities. An important issue of this process implies calculating a number of groups being formed as a result of the enrollment.

This task is actually not well-formalized and therefore it may be rather hard for automation. We may regard an amount of groups as a goal function but this goal function should be either minimized or maximized depending on actual circumstances. We may also introduce a fuzzy rule "If amount is AVERAGE then result is GOOD", and then we are developing an approach of fitting the membership functions for the concepts of this rule [1].

There are some specific constraints, e.g. maximum amount of groups, maximum and minimum amount of students in groups etc. The point is that these constraints may change dynamically and they are quite flexible. So we are describing these constraints by means of fuzzy rules corresponding measures of breaking these constraints to penalties of doing this. We are developing the approach of fitting these rules with respect to the desired results, some iteration process of fitting is considered.

Another important point is the automated elaboration of recommendations how to combine different courses in order to optimize the amount of student groups. Semantic distances between disciplines and frequencies of simultaneous choices of them obtained by the Apriori algorithm [2] are taken into account.

References

1. Oletsky O. An approach to forming recommendations at the web-portal on the base of fuzzy sets. //Scientific Notes of the National University Kyiv-Mohyla Academy. Computer Science, 2015. – Vol.177. –PP.57-60. (in Ukrainian).
2. Bing L. Web Data Mining: Exploring Hyperlinks, Contents and Usage Data, Springer Verlag, 2011.