SELECTING THE BEST PRE-DIPLOMA STUDENTS USING FUZZY EVALUATION

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Acknowledgement

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Enhanced Executive Summary

This project proposes the comprehensive evaluation of Pre-Diploma students in recent semesters using fuzzy approach. It focuses on how we can select the best students based on both academic performance and soft skills for university recognition purposes. The approach utilizes membership functions to derive the membership values for the entire course which registered for first semester. Then the approach employs the intersection of fuzzy goals and constraints concept to identify the best students among the best in terms of academic performance, soft skills as well as their attitude. A case study was conducted based on session intake of November 2013 - March 2014. It was found that our proposed approach has unique advantage in the sense that it can distinguish clearly for every single score marks obtained by the students. Also, the results show that the approach is highly beneficial for problem solving under uncertainty data sets environment.

1. Introduction

Evaluating students' academic performance using appropriate techniques is important to ensure fair assessment of their qualities. A good evaluation system provides grounds for individual improvement and ensures that students receive fair grading so as not to limit students' present and future opportunities (Saleh and Kim, 2009). Since employers are concerned about soft skills (i.e. speaking, teamwork etc), these factors also need to be included in the evaluation of the student performance. Thus, evaluating student's performance, which takes into consideration both academic achievement and soft skills, has become a challenge for universities to ensure that the students are rewarded accordingly (Arbaiy *et al.*, 2006).

In conventional methods, the performance of the students are numerically accessed through examination results, coupled with on-going assessments such as tests, assignments and quizzes by using simple arithmetic and statistical analysis, that is percentages and averages. It finally would give students a single-letter grade (A, B or C) based on numerical interval-value that refers to a certain category of achievements. The categories are expressed in linguistic terms such as "excellent", "good", "pass" or "fail" etc. However, these traditional methods of classifying and grading student academic performance does not necessarily offer the best way to evaluate human acquisition of knowledge and skills (Rasmani *et al.*, 2013). Furthermore, in some cases, the quality which defined in linguistics terms is associated with imprecision and vagueness (Patil *et al.*, 2012).

The application of fuzzy approach in evaluating student performance has attracted many researchers over the years. The studies have been conducted on various educational system including the evaluation of curriculum as well as the group of educators such as lecturers and tutors. This research works presents the advantage of fuzzy approach in students performance evaluation. The students performance are measured not only based on solely their academic achievement but also some of their specific soft skills and abilities.