ABSTRACT

In a country like India, the growth rate of the number of academic institutions is at par with the lost student rate. Hence when a lost student is found we need to identify the student on the basis of information such as name of the student, institution name where he studies, class or branch of the student, etc. But the fact is that in most of the cases one never gets complete and precise information to identify a lost student. Hence, in such environment a soft computing model can be an attractive alternative to identify a lost student on the basis of imprecise or partial information. This paper presents a soft computing model for identifying lost student on the basis of imprecise and partial information. In this model student information is represented as a symbolic student object. Symbolic student object is further processed using a fuzzy symbolic model for identifying the lost student. The authors have devised a symbolic knowledge base which acts as a repository of information pertaining to student of different institutions that assist in creating student object and identifying the lost student. A fuzzy technique “symbolic similarity measure” is devised for generating symbolic student object and mapping the symbolic student object with student information present in knowledge base. This system has been tested scrupulously and an efficiency of above 90% has been achieved in identifying the lost student.

Keywords: Fuzzy Theory, Imprecise, Incomplete, Lost Student Tracking, Soft Computing, Student Database

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1. INTRODUCTION

The most vital task when a lost student is found is to recognize the student. It becomes difficult and time consuming venture when we do not have accurate information about the lost student. Hence a soft computing model can be employed for assisting in identifying the lost student in such environment where detailed information of the student is not available. To the best of our knowledge there has not been any reported work on identifying the lost student on the basis of improper information.

The task of identifying a lost student requires categorization and classification of textual information. Text categorization (also known as text classification or topic spotting) is the task of assigning predefined categories to free-text documents based on their content (Sebastiani, 2002). Automated text classification is desirable because it gives freedom from manually organizing text or document, which can be too expensive, or not feasible due to the time constraint. We can employ text categorization using different methods such as statistical and machine learning techniques which includes support vector machine (SVM) (Cortes & Vapnik, 1995), regression analysis, decision trees, k-nearest neighbor classifier, and Bayesian classifiers (Sahami, 1996).

To deal with imprecise and inexact information a new paradigm has been introduced in computational strategies known as “Soft computing” coined by Lotfi Askar Zadeh (Zadeh, 1965). Soft computing is a consortium of methodologies, which includes Fuzzy Logic (FL), Neural Networks (NN) (Carpenter, Grossberg, Markuzon, Reynolds & Rosen, 1992), and Evolutionary Algorithms (e.g., Genetic algorithms (Goldberg, 1989)) as a main constituents and is also confluence with Expert System (ES) (Buchanan & Smith, 1989), and Machine Learning (ML), which provide flexible information processing capabilities to solve real-life problems. The advantages of employing soft computing (Mitra, Pal, & Mitra, 2002) is its capability to tolerate imprecision, uncertainty, and partial truth (Maeda, Ashida, Taniguchi, & Takahashi, 1995) to achieve tractability and robustness on simulating human decision-making behavior with low cost.

Identifying a lost student with inappropriate information is a tiring and time consuming task. In this paper we have proposed a soft computing model for identifying lost student which takes Student Information as input and identify the lost student. The model of the proposed system is depicted in Figure 1.

The soft computing model requires appropriate representation of student information. The characteristics of lost student information

Figure 1. Schematic diagram of soft computing model for tracking lost student
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Peter J. Bentley (2005). Recent Developments in Biologically Inspired Computing (pp. 320-339).
www.igi-global.com/chapter/controlling-robots-fractal-gene-regulatory/28333?camid=4v1a

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