EVALUATION OF ACADEMIC PERFORMANCE OF STUDENT WITH FUZZY LOGIC

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***Abstract*— Academic performance or how effectively a student satisfies defined requirements, is used to gauge achievement in educational institution educational policies enacted by the government and the institution regulationandrules. Thisresearchsuggests a new type of performance. Fuzzy logic system are used to evaluate features like theoretical exam , practical exam then comes we derive a new result utilizing fuzzy logic based on the fuzzy inference system method for grading students the outcomes of our research methodologies for some real-life examples demonstrate the applicability of our strategy method for assessing university students' performance.**

***Keywords*— Fuzzy Logic, Performance Evaluation, Decision Making**

I. INTRODUCTION

The fuzzy logic theory, which originally appeared in the twentieth century, was widely discussed and implemented in Asia and Europe in the early twenty-first century in all fields measurements and evaluation is one of the applications off uzzylogic theory. In this instance the purpose of this paper is to define the "fuzzy logic theory's impact on students achievement."

Students are motivated and his qualities are recognized when they are evaluated based on their performance.

Many colleges and institutes seek input from the stakeholders on their institute, staff, students' progress, and activities undertaken, among other things. The student's performance can be assessed using statistical analysis of suchinput.

This feed back may be given in the form of a letter grade or a percentage and the findings are not always accurate. The reason for this is that interpolating actual quality between grades is challenging. In certain circumstances, quality is described using linguistic terms like poor, average, good, best, and so on, which are connected with ambiguity and imprecision.In this paper, an attempt is made to investigate the modelling capabilities for imprecision, ambiguity, and uncertainty, all of which are unavoidablein the performance evaluation process.

Fuzzy Inference System

The Fuzzy Inference System is a central component of fuzzy logic system that performs decision-making. It draws fundamental decision rules using the "IF…THEN" rules and connectors "OR" or "AND."

Fuzzy Inference System Characteristics:

The following are some FIS qualities.

- FIS's output is always fuzzy set, regardless of the input, which can also be fuzzy orcrisp.
- When utilized as a controller, it is required, it is required to have fuzzy output.
- With FIS, there would be a defuzzification unit to transform fuzzy variable into crispones.

Fuzzification

The system requires input fuzzy sets to begin the inference process. There are two scenarios:

- Raster Inference: The value of the raster maps are used to define the input fuzzysets.
- Assumethatxisthetruevalueofthe processes point, and that the input fuzzy set is written asby:
- (x-3s,x-s,x+s x+3x,1-q) with s step of the universe and q quality of map.
- Vector Inference: Input fuzzy sets are the linguistic words of the linguistic variable in vectors inference. Geographic objects are produced with linguistic word meanings when vector maps are created from raster maps.

Defuzzification

It is the process of producing a quantifiable outcome in crisp logic, equivalent degrees of membership it's the procedure for converting a fuzzy set to a crisp set.

It's most commonly used in fuzzy control system. These system will have a variety of features.Asetofrulesfortransformingaset of variable into a fuzzy result,i.e.

expressed in terms of fuzzy set membership for instance, rules that are used to make decisions. How much pressure should be applied ?

Reduce the pressure by 15% and keep it constant , increase Pressure(34%), Increase Pressure(72%)," says the author.

Defuzzification is the process of comprehending the data . The fuzzy sets' membership degrees are converted into a specific decision or real value.

The centre of gravity technique is a widespread and useful defuzzification technique. To begin, the rules' outcomes mustbecombinedinsomeways.Thegraph of the most common fuzzy set membership function is a triangle. If this triangle wereto be sliced in half, what would it lookslike?

Between the top and the bottom, a straight horizontal line, and the top portion . If the top half of the trapezoid is removed, the remaining portion produces a trapezoid.

Method

This methodology was created to help pupils evaluate their own performance.This method uses fuzzy logic to estimate performance in an effective manner, which is one of the many ways used for analysis. For the procedure, this method removes the use of derivations and formulas.The system accomplishes this through the use of numerous modules. The following are the methods.

- Login as an administrator.
- Enter student information
- Evaluate performance

Admin login is the first stage in constructing the Fuzzy Logic System. The authored authority will be given to admin access and will be able to monitor the entiresystem.

The next step in this method is to enter the student's information. Internal marks, external marks, and the attendance of each students in an institution are among the details. The entries must be completed without any missing values in order for the result to be effective. Admin is the one who enters the values. The admin has the ability to create new entries, delete existing ones,and update values. Users can only use this model if the admin gives them permission.

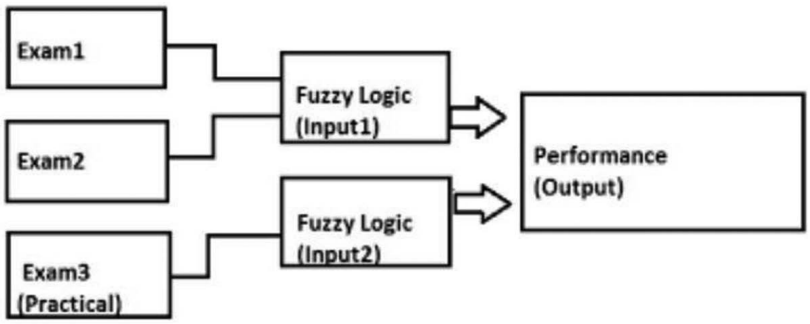

Fig.1.:Fuzzy Logic

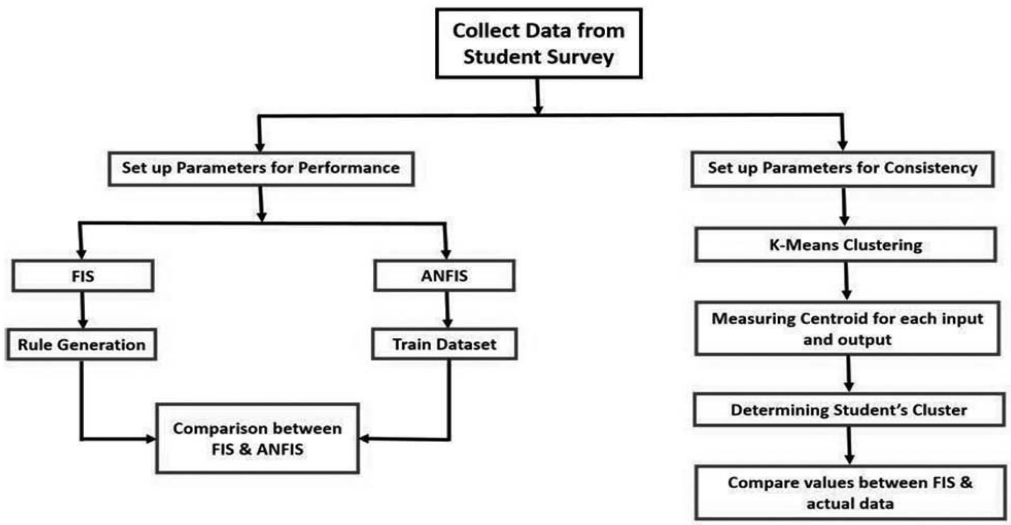

Fig.2.: Flowchart

He operates as the system's master controller in order to prevent difficulties such as data theft. Performance revies isthe final stage of the procedure, in which attributes such as grades and attendance are considered and an overall evaluation is completed.

This strategy produces a final result that is deemed to be more effective when compared to statistical methods. time. It is especially beneficial to educational institution and training centre.

Section A- Data Collection
In order to identify the features or criteria that may influence a student's academic success, data collecting is necessary. Data collection if two methods for students.

Student's who have completed at leastthree semesters.
Question answers are grated pin a scale of High, Very High and Extremely High.

Section B- Data Analysis
Identifying the aspects that influence a student's success and consistency, because academic results are being evaluated, the CGPA of students has been scaled.

Section C- Rule Formation
In order to construct the fuzzy knowledge base, "IF-THEN" rules were created utilizing memberhip values for each of the input parameters based on real-life scenarios that students are likely to encounter.

Section D- Academic Performance
Datasets is loaded into ANFIS Editor,each of which contains ten input parameters .The ANFIS tool generates rules and outputs rules and outputs based on this dataset.

Section E- K -Mean Algorithm
This algorithm is applied fir consistency. Thia stage divides data into clusters based on the ratio of variance .

In addition, it aids in the correct forecast of fresh data.

CONCLUSION

Students can use this application to easily determine their performance and consistency. They will be able to understand the factor that could affect their academic consistency and performance.

Everything is according to the fuzzy logic theory, is a matter of degree, and the fuzzy sets are the basic concepts of this theory. These hazy sets can be used in the classroom.Because the point of the view for educational scenarios is not the same as the logic 0-1.

The traditional success grades of studentsat the university of Firat's Faculty of Education are calculated and compared to theirsuccessgradesbasedonthefuzzylogic theory in thisstudy. When the traditional success grades and the success grades based on the fuzzy logic theory were compared, a significant difference was observed in favour of the fuzzy logic theory.

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