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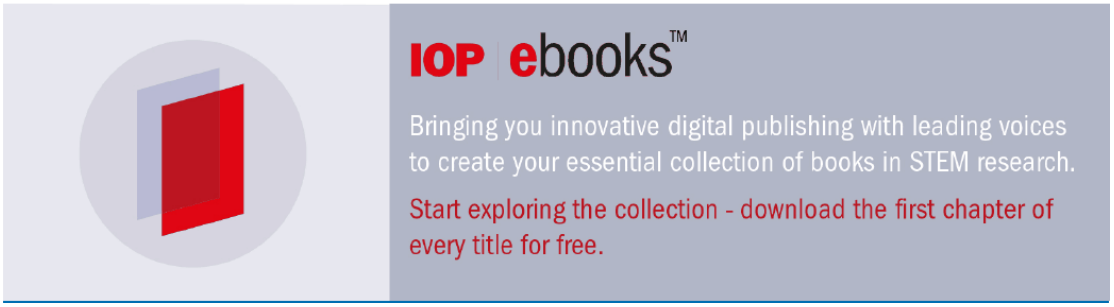

Classification of Children Intelligence with Fuzzy Logic Method

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Abstract. Intelligence of children s An Important Thing To Know The Parents Early on. Typing Can be done With a Child's intelligence Grouping Dominant Characteristics Of each Type of Intelligence. To Make it easier for Parents in Determining The type of Children's intelligence And How to Overcome them, for It Created A Classification System Intelligence Grouping Children By Using Fuzzy logic method For determination Of a Child's degree of intelligence type. From the analysis We concluded that The presence of Intelligence Classification systems Pendulum Children With Fuzzy Logic Method Of determining The type of The Child's intelligence Can be Done in a way That is easier And The results More accurate Conclusions Than Manual tests.

1. Introduction

Children are the heart of every parent of all the attention and affection devoted to the delight of the baby, sometimes all the child's desire is always filled to please his baby, the role of parents greatly affect the development of children's abilities in the hope that the child grows with the ability in Want, look smart and smart (smart visibility) This is the old faithful hope.

In this sense intelligence is the inferred entity, term or construct we use to explain the difference in behavior to predict differences in future behavior. Has repeatedly emphasized the fact that all tests, IQ tests will produce different intelligences, when taken from a sample test that [1]

Therefore, the development of children is very important to note while the level of ability of children have diverse. No exception in children. Today at an early age have been prepared to interact globally with the changes. Therefore, the child's intelligence fertilization often

This means that intelligence or skill is only understood as the ability to solve problems mathematically according to existing theory. Of course, the assumption about this mathematical ability raises the logical consequence of teachers in assessing their students using IQ parameters only. So the impact on the provision of the highest awards on students who have logical intelligence (*"smart logic").* In contrast, children who are unskilled or unskilled in mathematics are often regarded as lacking in intelligence, so the most fundamental question is whether if a student gets a score of 0 in a mathematics course, can it be concluded that the student is stupid (IQ squatting)? (Agustin Leony: 2)

1.1. Purpose

The purpose of this study with the topic "Grouping of Children's intelligence, with Fuzzy Logic approach" in early childhood between the ages of 5 to 12 this year are:

1. The realization can know the level of intelligence of a child at an early age.

2. As input for decision making with regard to child intelligence type and how to optimize its potential.

2. Fuzzy Logic Method

Fuzzy Logic is an appropriate way to map an input space into an output space. One example of such mapping is in graphical form as shown on the picture below explains that between the input and output there is a link that must be mapped *input* to *output* accordingly.

Representation of the Triangle Curve is basically a combination of two linear lines as shown at figure 1.

$$\mu[x] = \begin{cases} 0; & x \le a \\ (x-a)/(b-a); & a < x \le b \\ (c-x)/(c-b); & b < x < c \\ 1; & x \ge c \end{cases}$$

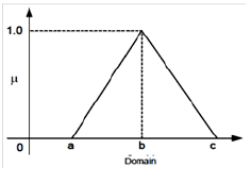

Figure 1. Representation of the Triangle Curve

2.1. Membership Function on Fuzzy Logic

Membership function *(MF)* is a curve that shows the mapping of points *of input* data into membership values (often called the degree of membership) which has the interval between 0 and 1 (Sri Kusumadewi, 2004: 160). One way that can be used to get a membership value is through a function approach. Some commonly used functions include linear representation, triangular curve representation, trapezoid curve representation, shoulder curve representation, curve S representation, and bell curve representation. The trapezoid curve is basically a triangular shape, but there are some points that have a membership value of 1.

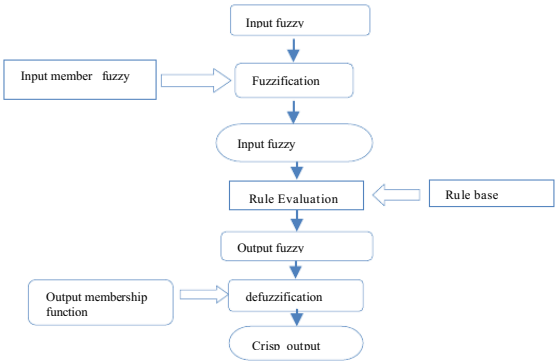

Figure 2. Flowchart System

2.2. Fuzzyfication

Fuzzyfication is the process of mapping the input values (crisp input) derived from a controlled system (non fuzzy quantity) into the fuzzy set according to its membership function

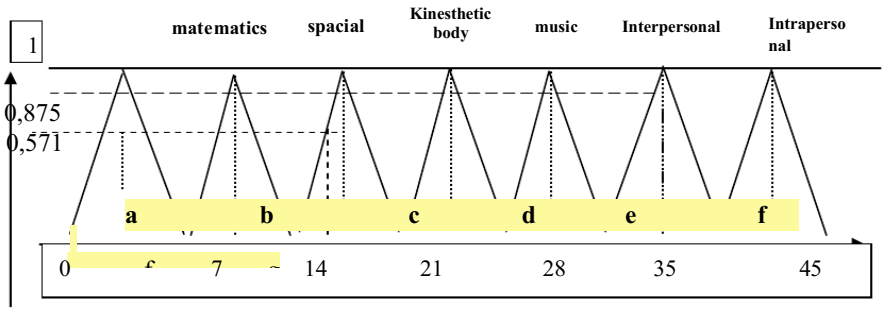

Figure 3. the trapezoid curve

Based on the trapezoid curve in Figure 3 above, the fuzzy logic membership function can be written as follows

x ≤ a atau x ≥ d
(x-a) / (x-b);
a < x < b
1. b < x < c _ _
(d-x) / (d-c); x > d _
2. c < x < c _ _
(c-x) / (d-c); x > d _
3. c < x < e _ _

In the book called Master Faster, Collin Rose [4] noted that in 1983 Howard Gardner *Theory of Multiple Intelligence* displays that strengthen the perspective of human cognition. Here's a description of seven intelligences according to Gardner:

1. Linguistic Intelligence *(Linguistic Intelligence)*
   Linguistic intelligence is the ability to think in terms of words and use language to express and appreciate complex meanings.
2. Logical-Mathematical intelligence (mathematical *Logical- Intelligence)*
   Logic-mathematical intelligence is the ability to calculate, measure and consider propositions and hypotheses, as well as complete mathematical operations
3. Spatial intelligence *(Spatial Intelligence)*
   Spatial intelligence awakens the capacity to think in three dimensional ways. This intelligence enables one to feel the external and internal shadows, re-paint the shadows, and objects through the room, which can produce information graphically.
4. Kinaesthetic Intelligence Body *(Bodily-kinaesthetic Intelligence)*
   Kinaesthetic intelligence allows one to move objects and subtle physical skills. And accustomed to express themselves through the movement of the body.
5. Musical intelligence *(Musical Intelligence)*
   Musical intelligence is clearly visible in a person who has a sensitivity to the pattern of pitch, melody, rhythm, and tone. Not only with composers or musicians, but also sensitive listeners.
6. Interpersonal intelligence *(Interpersonal Intelligence)*

Interpersonal intelligence is the ability to understand and interact with others effectively. As western culture begins to introduce the relationship between mind and body, it is necessary to realize again the importance of the value of expertise in interpersonal behaviour.

7. Intrapersonal intelligence *(intrapersonal Intelligence)*
   Intrapersonal intelligence is the ability to make accurate perceptions about oneself and use such knowledge in planning and directing one's life Some individuals who have this kind of intelligence are theologians, psychologists, and philosophers.

2.3. Children's Intelligence

A person's intelligence can be detected at the age of the children. Because at an early age that the ability to think a child is growing. Benefits of detecting children's intelligence from an early age include:

1. Efficient in choosing readings, toy tools and courses to suit his talents.
2. Focus and more details on the child's primary needs.
3. Confident and more confident of his superior talent as well as not feeling down for the weak talent.
4. More definitely looking for an environment that suits his superior talent. Planned early career

The place chosen to make this observation is on the learning guidance agency Primagama Quantum Kids Sulfate, Insan Permata Kindergarten Malang, and Early Childhood Education (PAUD) Permata Iman Malang.

With the number of students who have done the research as many as 10 students was already provided

Table 1. Description Characteristics and Weighting the value of intelligence of children

No.	Characteristic features	Check
1	Hear / respond to every sound, colour, word expression	
2	Learn through listening, reading, discussion	V
3	Understand, interpret what has been read well	V
4	Speak effectively to various listeners	
5	Great interest in journalism, poetry, story telling	V
6	Easy to remember melodies of songs that are listened to, following the rhythm of music	V
7	Achieving in the field of music or can play a musical instrument	
8	More can or like to learn with in music accompaniment	
9	Can create original compositions using certain musical instruments	
10	Feel the keen sensitivity to visual detail, balance, colour, line, shape and space	
11	Uses visual representation as a tool to remember information	
12	Creating a new form of visual-spatial media or artwork	
13	Loved the habit of seeing movies, slides and pursue fields	

3. Research result

Here is the result of fuzzy search using mamdani

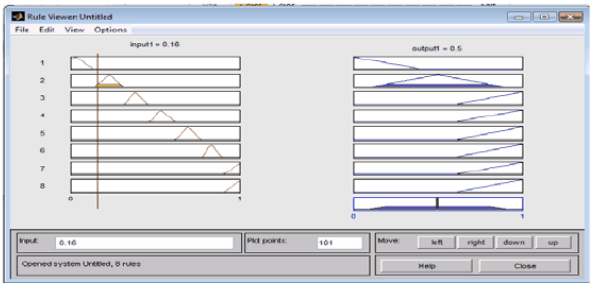

Figure 4. fuzzy grouping

Table 2. Testing Results Child Intelligence Grouping System

No	Name	Age	Intelligence Fuzzy logic method with matlab approach
1	Salsa	5	Linguistics
2	Octa	5	Interpersonal
3	Dhana	6	Linguistics
4	Dhani	6	Music
5	Aura	6	Music
6	Farah	5	Spatial
7	Khansa	6	KinestetikTubuh
8	Soraya	6	Math logic
9	Hildan	5	Math logic
10	Above	6	KinestetikTubuh
11	Fahri	5	Linguistics

4. Conclusion.

After analyzing the program and testing the object, it can be concluded as follows:

Child intelligence grouping system by using fuzzy logic method can do the reasoning with fuzzy logic method to determine child intelligence type with percentage of truth test result 80%. With the data accuracy error of 20% with the percentage calculation as follows:

From the number of data inputs of 100 true children of 80 then obtained 80/100 = 0.8x100 then obtained the results as mentioned above

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