**Artificial Intelligence**

**Reasoning: Fuzzy Set**

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**Problem Descriptions**

In this case, we are given 30 data of news, where each news has its own emotional and provocation level scaled from 0 to 100 and the truth of the data(Hoax or not) for the first 20 data . We have to use these 20 data to model our fuzzy inputs and output to detect the truth of the last 10 data.

|  |  |  |  |
| --- | --- | --- | --- |
| **Berita** | **Emosi** | **Provokasi** | ***Hoax*** |
| B01 | 97 | 74 | Ya |
| B02 | 36 | 85 | Ya |
| B03 | 63 | 43 | Tidak |
| B04 | 82 | 90 | Ya |
| B05 | 71 | 25 | Tidak |
| B06 | 79 | 81 | Ya |
| B07 | 55 | 62 | Tidak |
| B08 | 57 | 45 | Tidak |
| B09 | 40 | 65 | Tidak |
| B10 | 57 | 45 | Tidak |
| B11 | 77 | 70 | Ya |
| B12 | 68 | 75 | Ya |
| \B13 | 60 | 70 | Tidak |
| B14 | 82 | 90 | Ya |
| B15 | 40 | 85 | Tidak |
| B16 | 80 | 68 | Ya |
| B17 | 60 | 72 | Tidak |
| B18 | 50 | 95 | Ya |
| B19 | 100 | 18 | Tidak |
| B20 | 11 | 99 | Ya |
| B21 | 58 | 63 |  |
| B22 | 68 | 70 |  |
| B23 | 64 | 66 |  |
| B24 | 57 | 77 |  |
| B25 | 77 | 55 |  |
| B26 | 98 | 64 |  |
| B27 | 91 | 59 |  |
| B28 | 50 | 95 |  |
| B29 | 95 | 55 |  |
| B30 | 27 | 79 |  |

**Designed Method**

The method or algorithm that I will be using in this program is Fuzzy Set, the algorithm has 3 main function which are Fuzzification, Inference and Defuzzification. Fuzzification will take the emotion and provocation input and will find the height of the value in the graphic based on their x position and their y position. We solved that by using the formula for triangle or trapezium. Inference will use the fuzzy tables that we have created and will give us a maximum value for all if statement that we can use for the Defuzzification.

**Input**

These are the inputs for the emotion and provocation

Very low and very high is using a trapezium while the others are using triangles

The first number in the bracket represent the a, the second number in the bracket represent the b and the third number represent the c of each shape

While they may have the same shape. But each shape of motivation and provocation has different size, this are the table for their abc size.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Emotion | | | | Provocation | | | |
|  | A | B | C | Shape | A | B | C | Shape |
| Very Low | 0 | 10 | 30 | Trapezium | 0 | 10 | 30 | Trapezium |
| Low | 10 | 30 | 50 | Triangle | 10 | 30 | 39 | Triangle |
| Normal | 30 | 50 | 70 | Triangle | 30 | 50 | 74 | Triangle |
| High | 50 | 70 | 90 | Triangle | 71 | 85 | 90 | Triangle |
| Very High | 70 | 90 | 100 | Trapezium | 75 | 81 | 100 | Trapezium |

**Output**

The output will be using Mamdani. Where I spread a point at 10, 20, 30 and 40 for non hoax and 60, 70, 80, and 90 for hoax news. With the y\* formula, we will have a new value ranged in 0 to 100, and based on this value, we will decide the news is hoax or not. If its larger or equal to 50 it will be a hoax and not hoax if the value is less than 50.

**Fuzzy Rules**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | very high | n | n | y | y | y |
|  | high | n | n | n | y | y |
| **emotion** | normal | n | n | n | y | y |
|  | low | n | n | n | n | y |
|  | very low | n | n | n | n | y |
|  |  | very low | low | normal | high | very high |
|  |  |  |  | **Provocation** |  |  |