# Fuzzy Inference System for Tomato Production.

Journey to creating the inference system and decision made, mathematical equations and applications to its completion.

A fuzzy system is a system designed to make a human like decisions and it is structured to stored linguistic variables which contains terms and its value representations which are variations or sequence or range of values which sometimes include the lows, mid and highs which on this time we can class as the terms of a linguistic variables. A fuzzy system can store more than one linguistic variable which gives the system the ability to infer and use any of each as possible, depends on the rule given.

For example, we can use a student-test\_score as an example. Using the following as the linguistic variable and assigned terms.

|  |  |
| --- | --- |
| Linguistic Variable | Terms |
| Student | Fail, Pass, Average |
| Test\_Score | low, high, average |

For each term we must make sure it represent some set of variables which is used by the Inference system connected by the rules which is confined with the following keyword: IF, IS, THEN.

Rule:

R1 => IF Test\_Score IS low THEN STUDENT IS Fail

R2 => IF Test\_Score IS high THEN STUDENT IS Pass

R3 => IF Test\_Score IS average THEN STUDENT IS average

The whole instruction looks a bit reasonable until there is a degree of terms to look into. Lets assign each terms to a particular value.

High/Pass: 100-70

Average: 69-40

Low: 39-0

Now that we have assigned each terms with its values. A question needs to be asked. To what degree can we say a student fail or pass its test. Does having 39 mean he entirely failed his test like another student that has 10. Or does another student that have 70 is the same as pass as the one in 100?.

The fuzzy Inference system is design to make that decision to a good and precise degree of pass, fail or average.

Lets put it into play.

Using the following student Alao, Akin and Belda.

Alao scored 58, Akin scored 68 and Belda scored 88. Using the already decided common rule I will take you through an inference system will show us the degree at which each student scored.