

1. DOMAIN

Wash Time Calculation for Washing Machines

2. DESCRIPTION

This project is based on a paper- Three Input – One Output Fuzzy logic control of Washing Machine and uses Fuzzy logic to calculate wash time given cloth type, dirtiness and dirt type.

The washing machines that are used today (the one not using fuzzy logic control) serves all the purpose of washing, but which cloth needs what amount of agitation time is a business which has not been dealt with properly. In most of the cases either the user is compelled to give all the cloth same agitation or is provided with a restricted amount of control. The thing is that the washing machines used are not as automatic as they should be and can be. This paper aims at presenting the idea of controlling the washing time using fuzzy logic control.

3. FEATURES

It takes a user's laundry specific details namely

1. Material of clothes in laundry (Silk, Wool, Cotton)
2. Grease details
3. Level of dirt on clothes

With these details, we design a fuzzy logic system using Fuzzy Jess to calculate the wash time.

3. SYSTEM

Input (Number) -> Fuzzified to specified discrete levels-> determine output level -> defuzzify output to number of minutes

For the knowledge base of this system, I referred to the Three Input – One Output Fuzzy logic control of Washing Machine paper for getting familiar with the different green card categories and their criteria.

3. HOW TO RUN

Copy the file WashingMachine.clp into your repository where the FuzzyJ jar is installed.
Run the project on Eclipse.

4. RULES

| S.no | ClothType | DirtType | Dirtiness | WashTime |
|------|-----------|------------|-----------|------------|
| 1 | Silk | Not greasy | Small | Very short |
| 2 | Silk | Not greasy | Medium | Short |
| 3 | Silk | Not greasy | Large | Medium |
| 4 | Silk | Medium | Small | Medium |
| 5 | Silk | Medium | Medium | Long |
| 6 | Silk | Medium | Large | Long |
| 7 | Silk | Greasy | Small | Medium |
| 8 | Silk | Greasy | Medium | Long |
| 9 | Silk | Greasy | Large | Very Long |
| 10 | Wool | Not greasy | Small | Short |
| 11 | Wool | Not greasy | Medium | Medium |
| 12 | Wool | Not greasy | Large | Long |
| 13 | Wool | Medium | Small | Medium |
| 14 | Wool | Medium | Medium | Medium |
| 15 | Wool | Medium | Large | Long |
| 16 | Wool | Greasy | Small | Long |
| 17 | Wool | Greasy | Medium | Long |
| 18 | Wool | Greasy | Large | Very Long |
| 19 | Cotton | Not greasy | Small | Short |
| 20 | Cotton | Not greasy | Medium | Medium |
| 21 | Cotton | Not greasy | Large | Long |
| 22 | Cotton | Medium | Small | Medium |
| 23 | Cotton | Medium | Medium | Long |
| 24 | Cotton | Medium | Large | Very Long |
| 25 | Cotton | Greasy | Small | Long |
| 26 | Cotton | Greasy | Medium | Long |
| 27 | Cotton | Greasy | Large | Very Long |

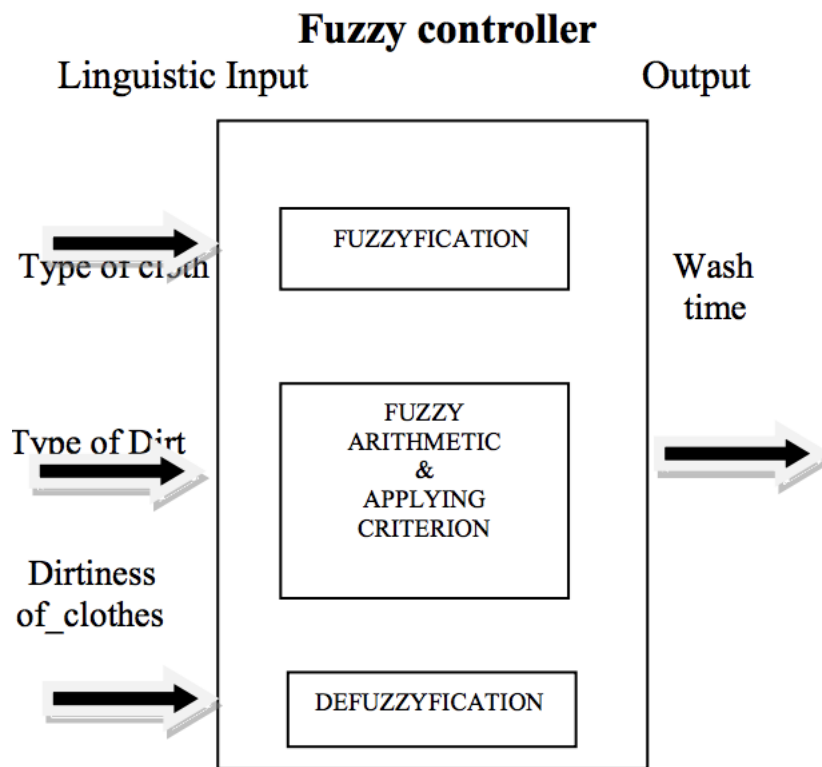


Fig 2: FLC for Washing machine

5. TEST CASES

1.

WELCOME TO THE WASHTIME EVALUATOR

\$\$ This Application calculates the number of minutes you will need to put your laundry in the washing machine

****NOTE: PLEASE PROVIDE A VALID INPUT FOR ALL THE QUESTIONS. REFER THE DOCUMENTATION FOR MORE INFO ON HOW TO USE THIS APPLICATION**

Enter information about the clothes you need to wash

Cloth type indicates type of fabric- silk, wool and cotton. Please enter cloth type:(0-10) :

4

Dirt Type indicates grease presence, if any- not_greasy, medium_greasy, greasy. Please enter dirt type:(0-10)

7

Dirtiness indicates 3small, medium or large amounts of dirt. Please enter dirtiness:(0-10).

2

*****Machine Assessment*****

The fuzzy settings of the Washing Machine system are :

Cloth type is 8.528645833333334

Dirt type is 1.4713541666666665

Dirtiness is 8.528645833333334

WashTime is 50.00000000000001 minutes

2.

WELCOME TO THE WASHTIME EVALUATOR

\$\$ This Application calculates the number of minutes you will need to put your laundry in the washing machine

**NOTE: PLEASE PROVIDE A VALID INPUT FOR ALL THE QUESTIONS. REFER THE DOCUMENTATION FOR MORE INFO ON HOW TO USE THIS APPLICATION

Enter information about the clothes you need to wash

Cloth type indicates type of fabric- silk, wool and cotton. Please enter cloth type:(0-10) :

6

Dirt Type indicates grease presence, if any- not_greasy, medium_greasy, greasy. Please enter dirt type:(0-10)

7

Dirtiness indicates 3small, medium or large amounts of dirt. Please enter dirtiness:(0-10).

9

The fuzzy settings of the Washing Machine system are :

Cloth type is 8.528645833333334

Dirt type is 1.4713541666666665

Dirtiness is 8.528645833333334

WashTime is 70.0 minutes

REFERENCES:

1. [Three Input – One Output Fuzzy logic control of Washing Machine](#): Sudha Hatagar , S.V. Halase
2. [Fuzzy Logic Control of Washing Machines](#) : Manish Agarwal