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A Study on Cooker for Preparation of Food Using Fuzzy Logic Technique

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Abstract: The Cooker which is used now a day is included with latest technology and logic which allows itself to think to the various factors like temperature and time for cooking of any item. A round circular inner cooking pan and the heating system distribute heat equally so that the item which is possessed with in the pan is cooked consistently.

Keywords: Automatic temperature, fuzzy logic control system, time.

I. INTRODUCTION

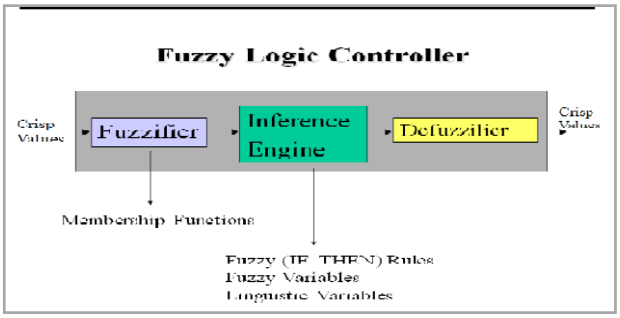
In the present scenario this Cooking system will cook any type of item like rice, any pulses and vegetables etc. during night time you need not wait for long time for the food to be prepared/cooked; it will make the item within 15 minutes of time.
In this cooker as we set the time accordingly it automatically sets the required temperature. Fuzzy logic is one form of representation of knowledge. Fuzzy control is a control system basically based on Fuzzy logic a mathematical system which analyses analog input values in terms of logical variables that take values between 0 and 1.

Proposed: The goal is to create a Fuzzy logic controller for a Cooker as we give time it calculates the accurate time and automatically sets the temperature for the chosen item.

II. LITERATURE SURVEY

A fuzzy control mainly is based on the fuzzy logic system which is generally closer to the human thinking and the natural language. A Fuzzy logic controller consists of three main operations: Fuzzification, Inference engine and Defuzzification. The input sensory data (crisp or numerical) data are fed into fuzzy logic rule based system where physical quantities are represented into linguistic variables with appropriate membership functions. These linguistic variables are then used in the antecedents (IF-Part) of a set of fuzzy "IF-THEN" rules within an inference engine to result in a new set of fuzzy linguistic variables or consequent (THEN-Part) One of the problems of conventional fuzzy logic control is that it takes a lot of CPU time for calculations, specially for large number of fuzzy rules. This limitation prevents fuzzy logic from being used widely in real time systems.

Representation of fuzzy logic control system:



STEP WISE PROCESS FOR COOKING BASMATI RICE:

1. Start
2. Add water and Basmati rice to Cooker.
3. Set the time **t** for cooking therefore automatically sets the temperature **tep** with the help of fuzzy sets.
4. Sensor gathers the required data and send it to the controller
5. The controller is controlled by the fuzzy logic controlling system.
6. Result: cooking of Basmati rice is over and it automatically changes the system state and goes to keep warm state.
7. End.

III. ALGORITHM

Input: water, Basmati rice, time.
Procedure:
If(t==15min) then
Select tep=100 degrees
Else if(t==30min) then
Select tep=75 degrees
Else if(t==45min) then

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Select tep=50 degrees
Else if(t==60min) then
Select tep=30 degrees

Output: Cooked Basmati rice within time.

If any interruption like power failure occurs then again start from the resume time.

Controlling the process using fuzzy logic control system:

The following two sub systems are involved in the case of cooker for automatic temperature setting.

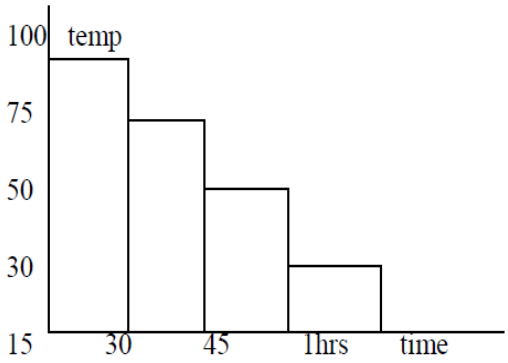
- The sensor system:- collects the data and sends them to the controller
- Based on the information that is sent by the sensor it sets the temperature automatically, the fuzzy logic controller is used

Fuzzy Sets:Very low, low, Medium, High and very High
Parameters of Fuzzy sets:

Very low[0-20 tep]
Low[21-30 tep]
Medium[31-50 tep]
High[51-75 tep]
Very High[76-100 tep]

for example if we initiate time t as 30 min it automatically sets the temperature as low, if we initiate time t as 45min it sets temperature t as medium etc.

IV. RESULTS



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V. CONCLUSION

Cooker with Fuzzy logic and control system is better than any other traditional cookers available now a days because it saves time and other factors in a greater extent.

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