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Csci141-Laboratory Exercise 3(Fuzzy Expert System)

WHOLE CHICKERN ON AIR FRYER CLASSIFICATION USING FUZZY EXPERT SYSTEM

Application:

Whole Chicken on Air fryer classification using fuzzy expert system is an application that will help you determine what would be the result of your whole chicken with the given time and temperature. It would tell us whether the result would be under-cooked, well-cooked, or over-cooked. It would easily help non-cookers in cooking whole chicken on an air fryer.

1. Define linguistic variables and terms both for input and output variable.

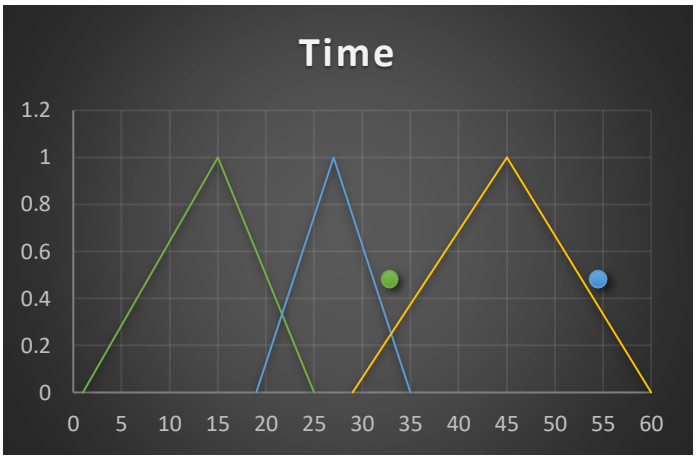
- Input
  - Time: Short, Average, Long
  - Temperature: Low, Medium, High

- Output: Under-Cooked, Well-Cooked, Over-Cooked

2. Construct membership functions.

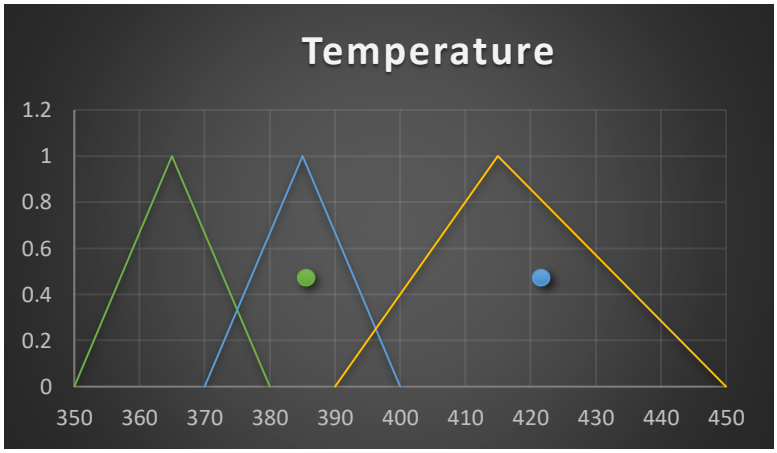
- Input Variable: Time

Linguistic Terms	**Universe of Discourse**
Short	[1 15 25]
Average	[19 27 35]
Long	[29 45 60]



- Input Variable: Temperature

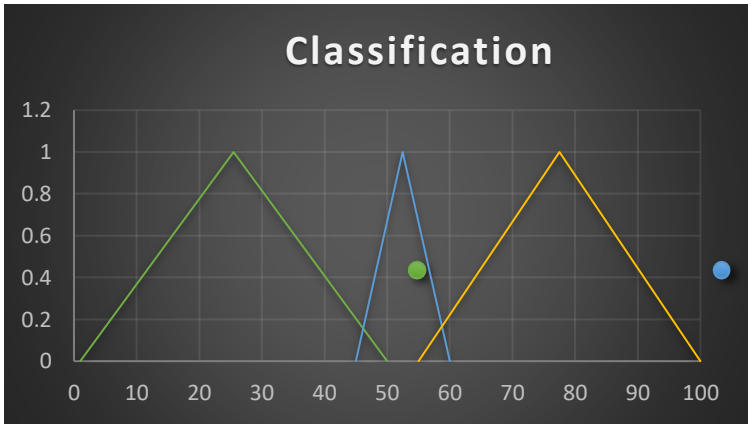
Linguistic Terms	**Universe of Discourse**
Low	[350 365 380]
Medium	[370 385 400]
High	[390 415 450]



- Output Variable: Classification

Linguistic Terms	**Universe of Discourse**
Under-Cooked	[1 25.5 50]

Well-Cooked	[45 52.5 60]
Over-Cooked	[55 77.5 100]



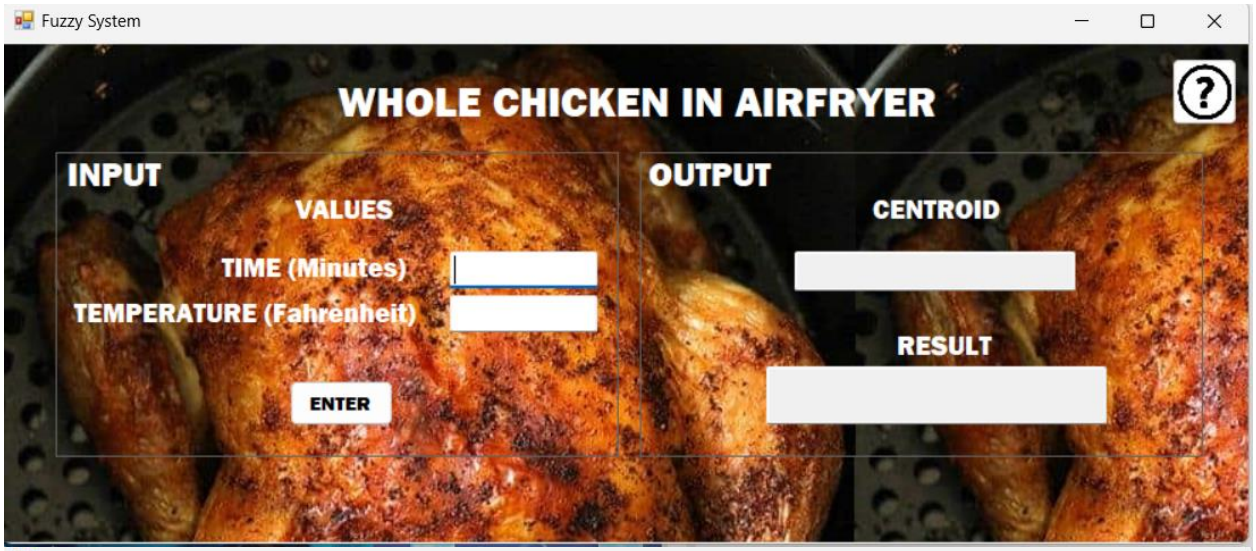
3. Define a set of rules to determine output based on the input values.

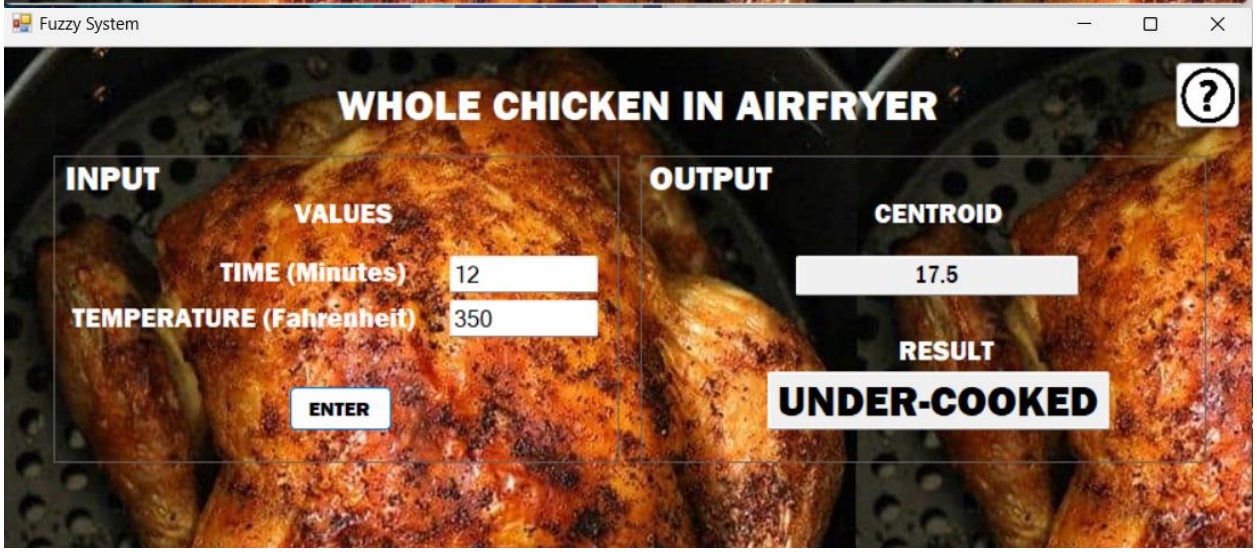
1. If (Time is Short) and (Temperature is Low) Then (Classification is Under-Cooked)
2. If (Time is Short) and (Temperature is Medium) Then (Classification is Under-Cooked)
3. If (Time is Short) and (Temperature is High) Then (Classification is Over-Cooked)
4. If (Time is Average) and (Temperature is Low) Then (Classification is Well-Cooked)
5. If (Time is Average) and (Temperature is Medium) Then (Classification is Well-Cooked)
6. If (Time is Average) and (Temperature is High) Then (Classification is Over-Cooked)
7. If (Time is Long) and (Temperature is Low) Then (Classification is Well-Cooked)
8. If (Time is Long) and (Temperature is Medium) Then (Classification is Over-Cooked)
9. If (Time is Long) and (Temperature is High) Then (Classification is Over-Cooked)

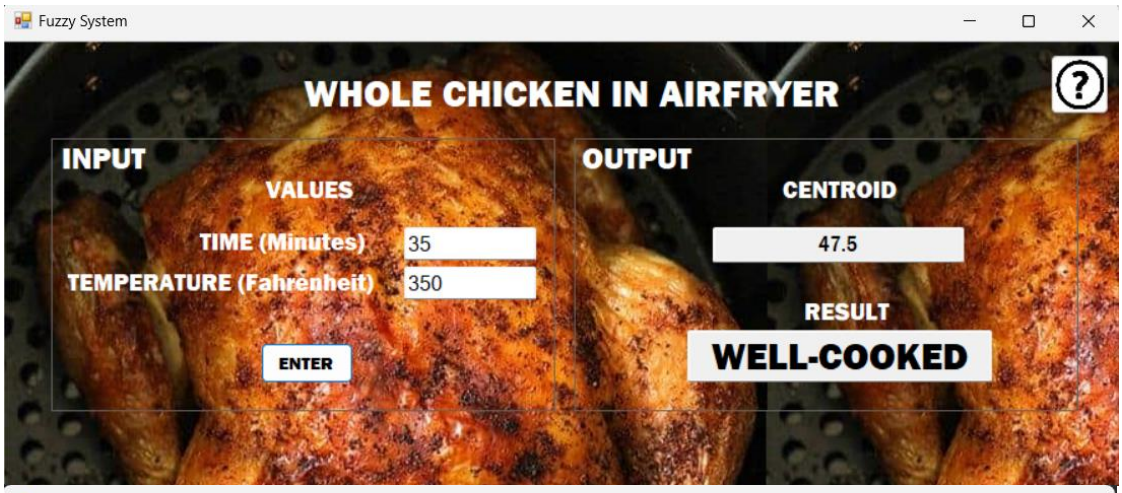
	Low	Medium	High
Short	Under-Cooked	Under-Cooked	Over-Cooked
Average	Well-Cooked	Well-Cooked	Over-Cooked
Long	Well-Cooked	Over-Cooked	Over-Cooked

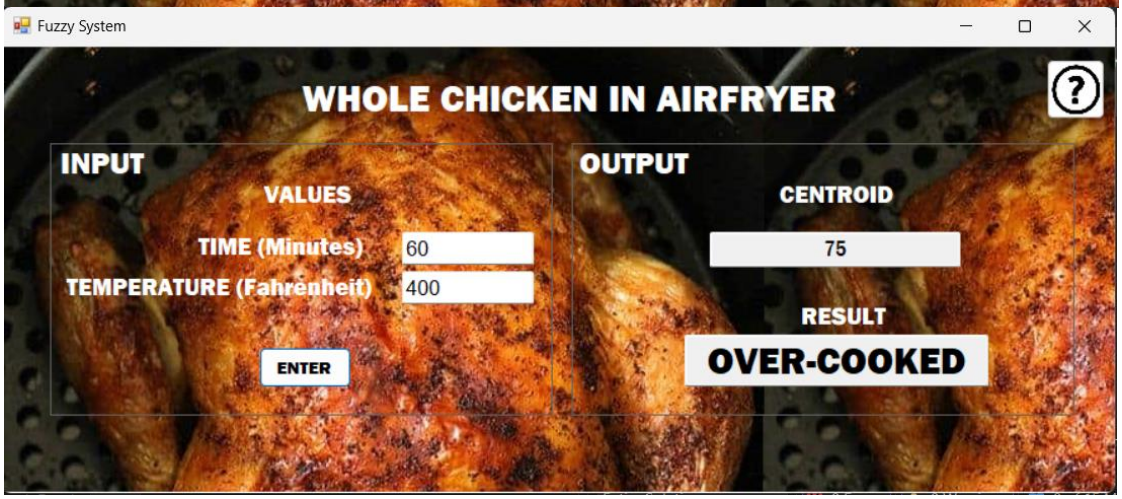
4. Screenshots of the application’s program flow.

   ❖ Homepage

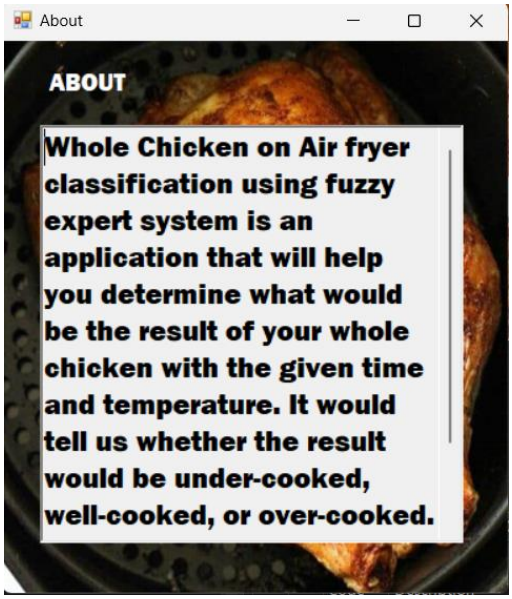





Fuzzy System
WHOLE CHICKEN IN AIRFRYER
INPUT
VALUES
TIME (Minutes)
35
TEMPERATURE (Fahrenheit)
350
ENTER
OUTPUT
CENTROID
47.5
RESULT
WELL-COOKED


Fuzzy System
WHOLE CHICKEN IN AIRFRYER
INPUT
VALUES
TIME (Minutes)
60
TEMPERATURE (Fahrenheit)
400
ENTER
OUTPUT
CENTROID
75
RESULT
OVER-COOKED

❖ About


About
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