AI23231-PRINCIPLES OF ARTIFICIAL INTELLIGENCE LAB

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Ex no : 10

Ex name : IMPLEMENTION OF A FUZZY INFERENCE SYSTEM

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PROBLEM:

```
import numpy as np
import skfuzzy as fuzz
from skfuzzy import control as ctrl

experience = ctrl.Antecedent(np.arange(0, 21, 1), 'experience')
success_rate = ctrl.Antecedent(np.arange(0, 101, 1), 'success_rate')
performance = ctrl.Consequent(np.arange(0, 101, 1), 'performance')

experience['low'] = fuzz.trimf(experience.universe, [0, 0, 10])
experience['medium'] = fuzz.trimf(experience.universe, [5, 10, 15])
experience['high'] = fuzz.trimf(experience.universe, [10, 20, 20])

success_rate['low'] = fuzz.trimf(success_rate.universe, [0, 0, 50])
success_rate['medium'] = fuzz.trimf(success_rate.universe, [25, 50, 75])
success_rate['high'] = fuzz.trimf(success_rate.universe, [50, 100, 100])

performance['poor'] = fuzz.trimf(performance.universe, [0, 0, 50])
```

```
performance['average'] = fuzz.trimf(performance.universe, [25, 50, 75])
performance['excellent'] = fuzz.trimf(performance.universe, [50, 100, 100])

rule1 = ctrl.Rule(experience['low'] & success_rate['low'], performance['poor'])
rule2 = ctrl.Rule(experience['medium'] | success_rate['medium'], performance['average'])
rule3 = ctrl.Rule(experience['high'] & success_rate['high'], performance['excellent'])

performance_ctrl = ctrl.ControlSystem([rule1, rule2, rule3])
performance_sim = ctrl.ControlSystemSimulation(performance_ctrl)

performance_sim.input['experience'] = 12  # Example: 12 years of experience
performance_sim.input['success_rate'] = 70  # Example: 70% success rate

performance_sim.compute()

print(f"Predicted Performance Score: {performance_sim.output['performance']:.2f}")
```

OUTPUT: