

```

In [53]: import numpy as np
import skfuzzy as fuzz
from skfuzzy import control as ctrl

temperature = ctrl.Antecedent(np.arange(0, 51, 1), 'temperature')
humidity = ctrl.Antecedent(np.arange(0, 101, 1), 'humidity')
hydration = ctrl.Antecedent(np.arange(0, 11, 1), 'hydration')
heatstroke_risk = ctrl.Consequent(np.arange(0, 101, 1), 'heatstroke_risk')

#parameters
temperature['low'] = fuzz.trimf(temperature.universe, [0, 0, 25])
temperature['medium'] = fuzz.trimf(temperature.universe, [20, 30, 40])
temperature['high'] = fuzz.trimf(temperature.universe, [30, 50, 50])

humidity['low'] = fuzz.trimf(humidity.universe, [0, 0, 40])
humidity['medium'] = fuzz.trimf(humidity.universe, [30, 50, 70])
humidity['high'] = fuzz.trimf(humidity.universe, [60, 100, 100])

hydration['low'] = fuzz.trimf(hydration.universe, [0, 0, 5])
hydration['medium'] = fuzz.trimf(hydration.universe, [3, 5, 7])
hydration['high'] = fuzz.trimf(hydration.universe, [5, 10, 10])

heatstroke_risk['low'] = fuzz.trimf(heatstroke_risk.universe, [0, 0, 30])
heatstroke_risk['medium'] = fuzz.trimf(heatstroke_risk.universe, [20, 50, 80])
heatstroke_risk['high'] = fuzz.trimf(heatstroke_risk.universe, [70, 100, 100])

#conditions
rule1 = ctrl.Rule(temperature['high'] & humidity['high'], heatstroke_risk['high'])
rule2 = ctrl.Rule(temperature['medium'] & hydration['low'], heatstroke_risk['medium'])
rule3 = ctrl.Rule(temperature['low'] & hydration['high'], heatstroke_risk['low'])

heatstroke_ctrl = ctrl.ControlSystem([rule1, rule2, rule3])
heatstroke_sim = ctrl.ControlSystemSimulation(heatstroke_ctrl)

#testing
heatstroke_sim.input['temperature'] = 40
heatstroke_sim.input['humidity'] = 80
heatstroke_sim.input['hydration'] = 2
heatstroke_sim.compute()
print(f"Heatstroke risk: {heatstroke_sim.output['heatstroke_risk']}")

```

Heatstroke risk: 88.33333333333333

In []: