Example (a Tipping Problem)

Let's create a fuzzy control system which models how you might choose to tip at a restaurant. When tipping, you consider the service and food quality, rated between 0 and 10. You use this to leave a tip of between 0 and 25%.

We would formulate this problem as

- Antecedents (Inputs)

Service

- Universe (crisp value range): How good was the service of the wait staff, on a scale of 0 to 10?
- Fuzzy set (fuzzy value range): poor, average, good

food quality

Universe: How tasty was the food, on a scale of 0 to 10?

- Fuzzy set: poor, average, good

- Consequents (Outputs)

Tip

- Universe: How much should we tip, on a scale of 0% to 25%
- Fuzzy set: low, medium, high

- Rules

IF the service was poor and the food quality was poor THEN the tip will be low.

IF the service was average, THEN the tip will be medium.

If the service was good or the food quality was good, THEN the tip will be high.

- Usage

If I tell this controller that I rated:

- the service as 9.8, and
- the quality as 6.5,

it would recommend I leave:

- a 20.2% tip

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- **Final result from code:**

If I tell this controller that I rated: and service as 9.8, and the quality as 6.5

Then Tip will be 19.847607361963192