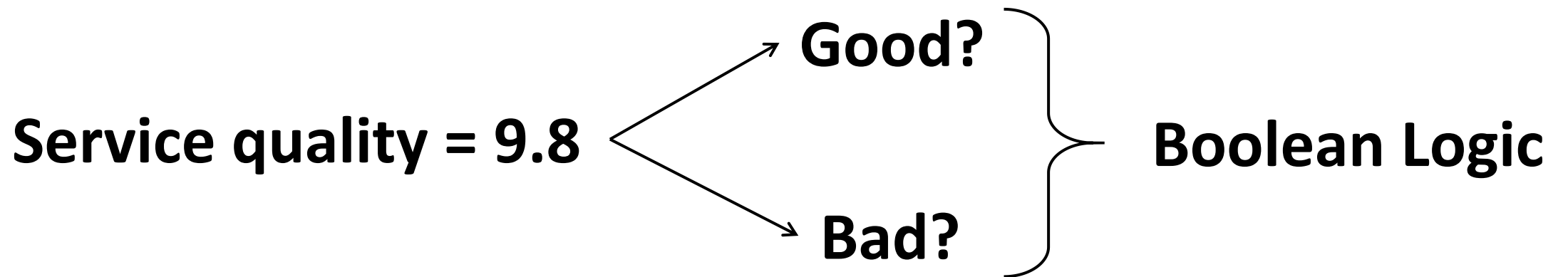
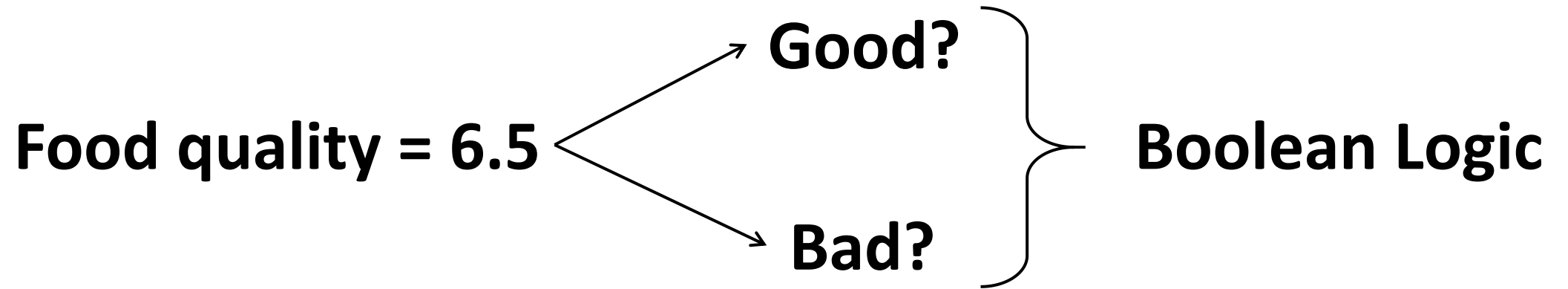
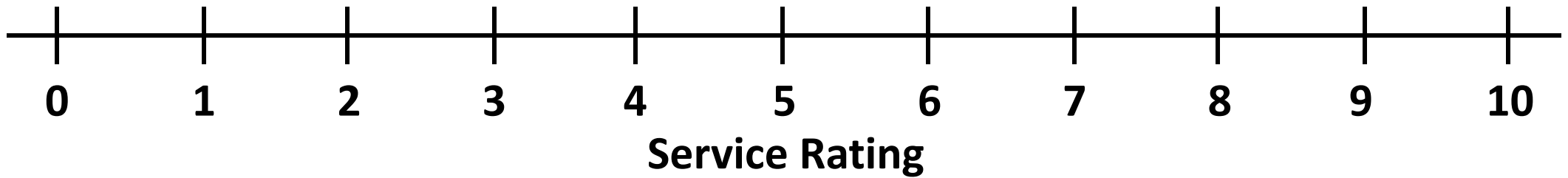


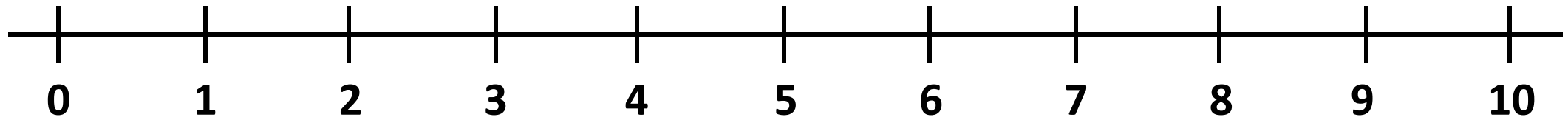
# Boolean Logic



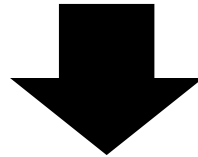
# Universe



# Sets/Classes

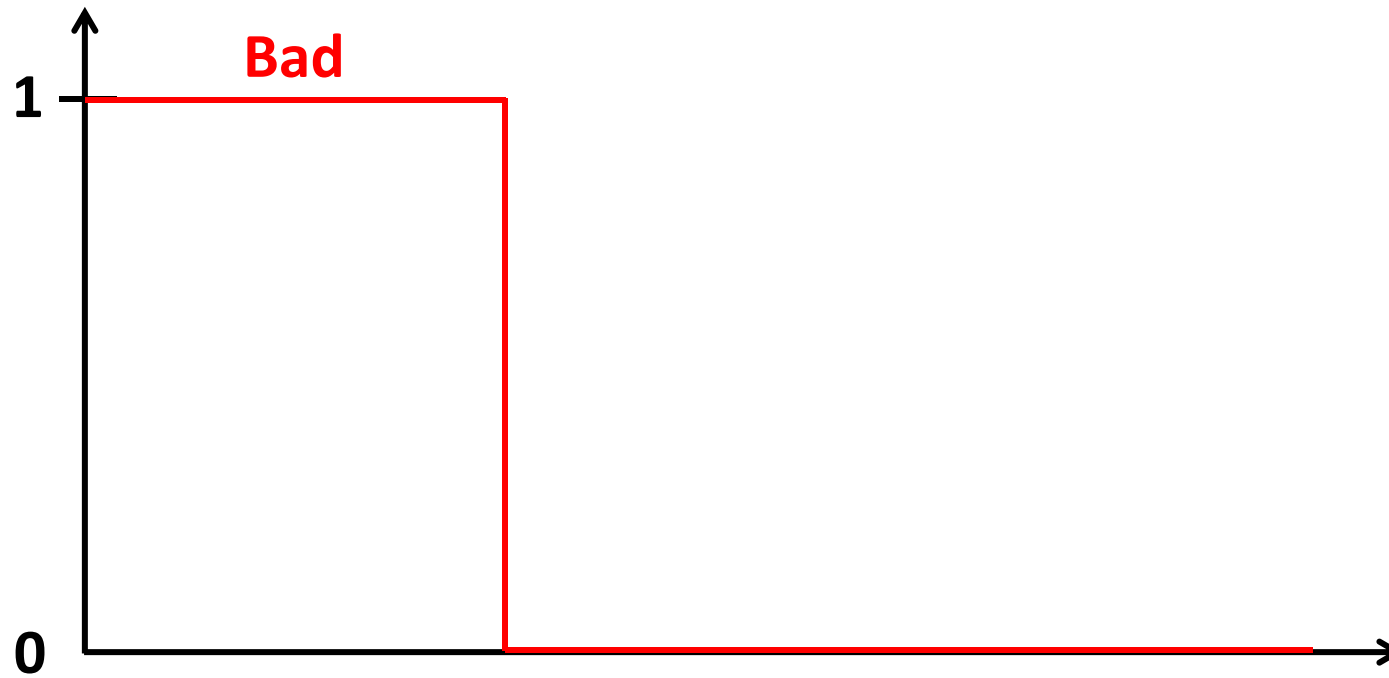


Food Rating

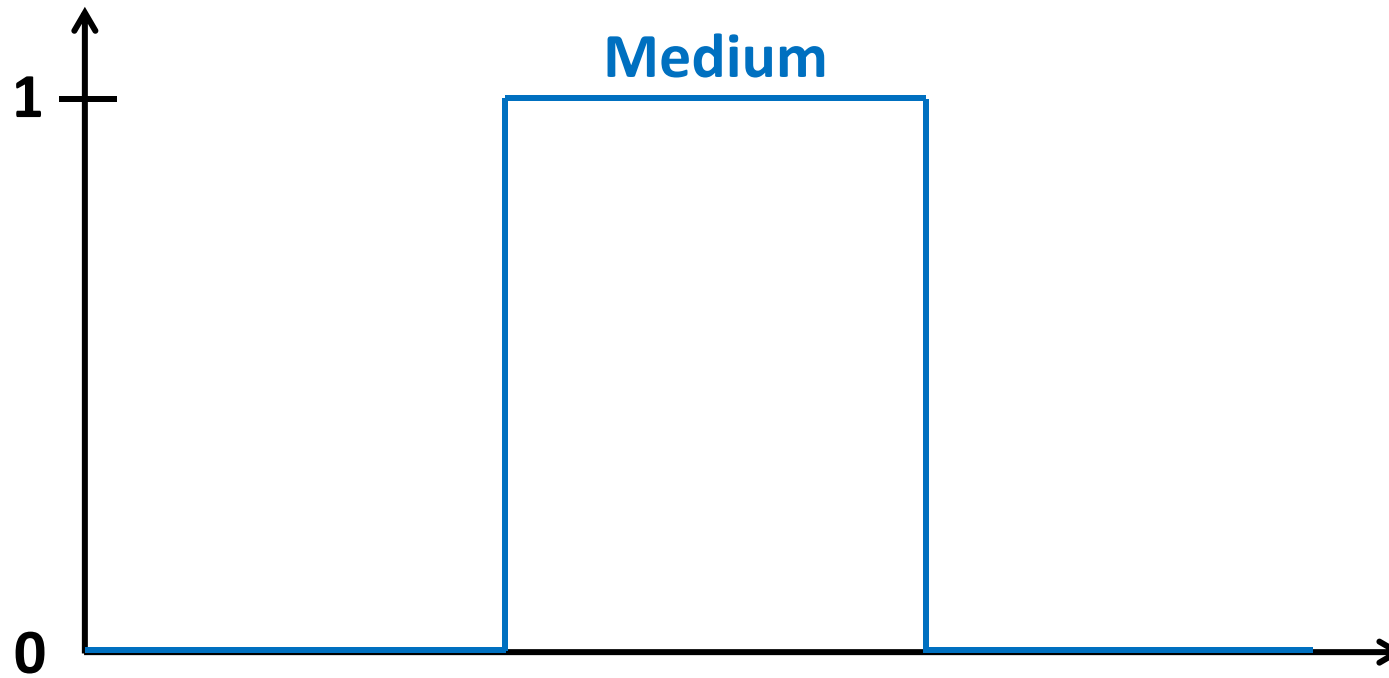


**Good? Medium? Bad?** ← Boolean Logic

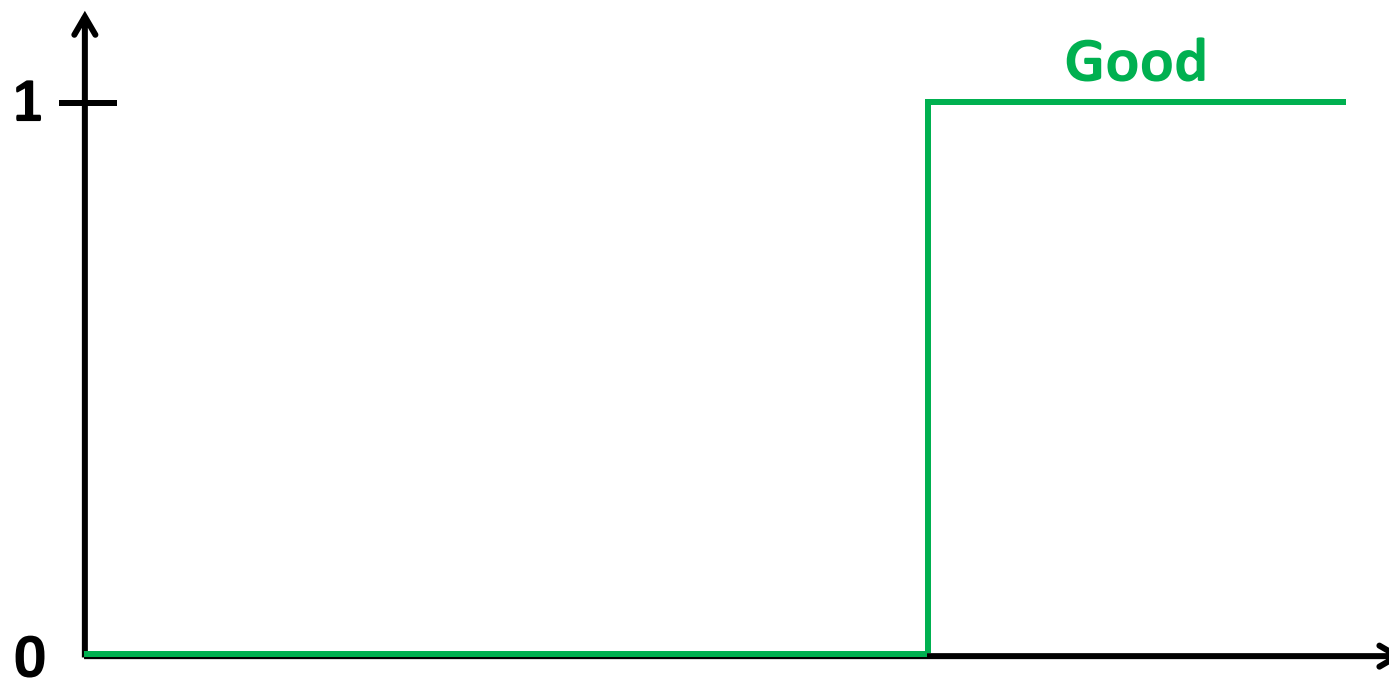
# Degree of Membership



# Degree of Membership



# Degree of Membership



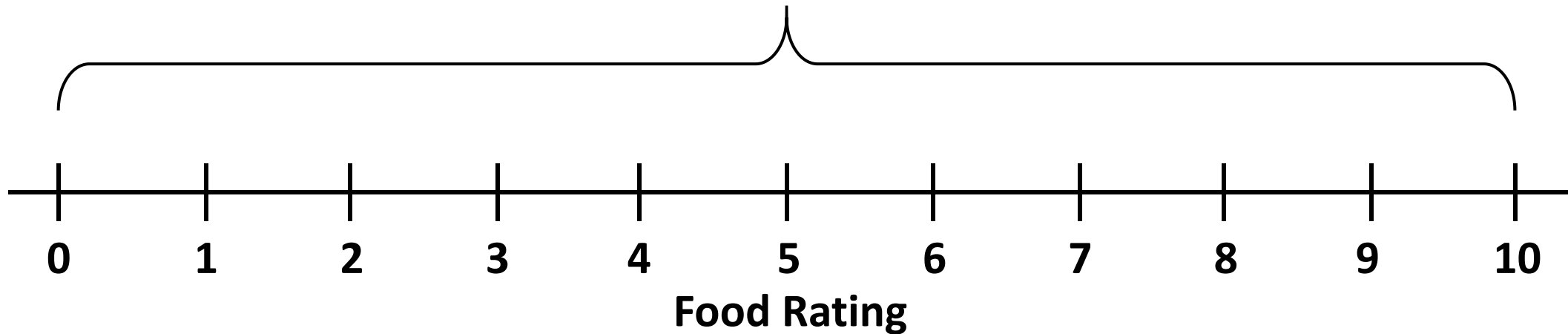
# Degree of Membership

## Boolean Logic

100% Good or 100% Medium or 100% Bad?

8.5 => Good

1.5 => Bad



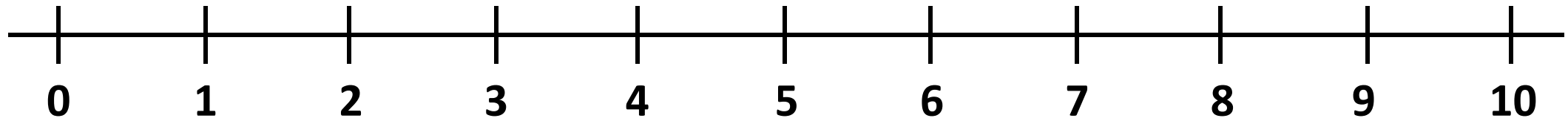
## Fuzzy Logic

?% Good, ?% Medium and ?% Bad?

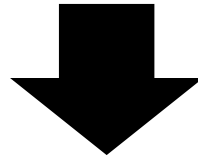
8.5 => ???

1.5 => ???

# Sets/Classes



Food Rating



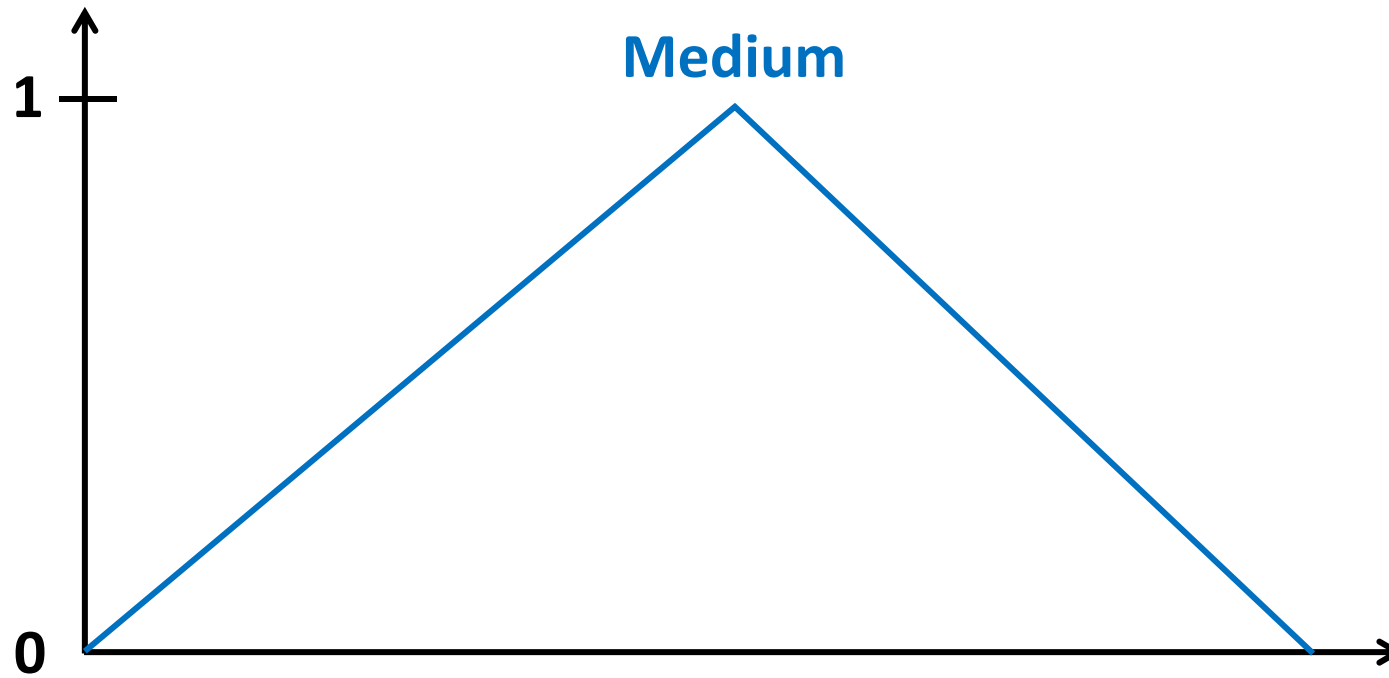
**Good? Medium? Bad?** ← Fuzzy Logic



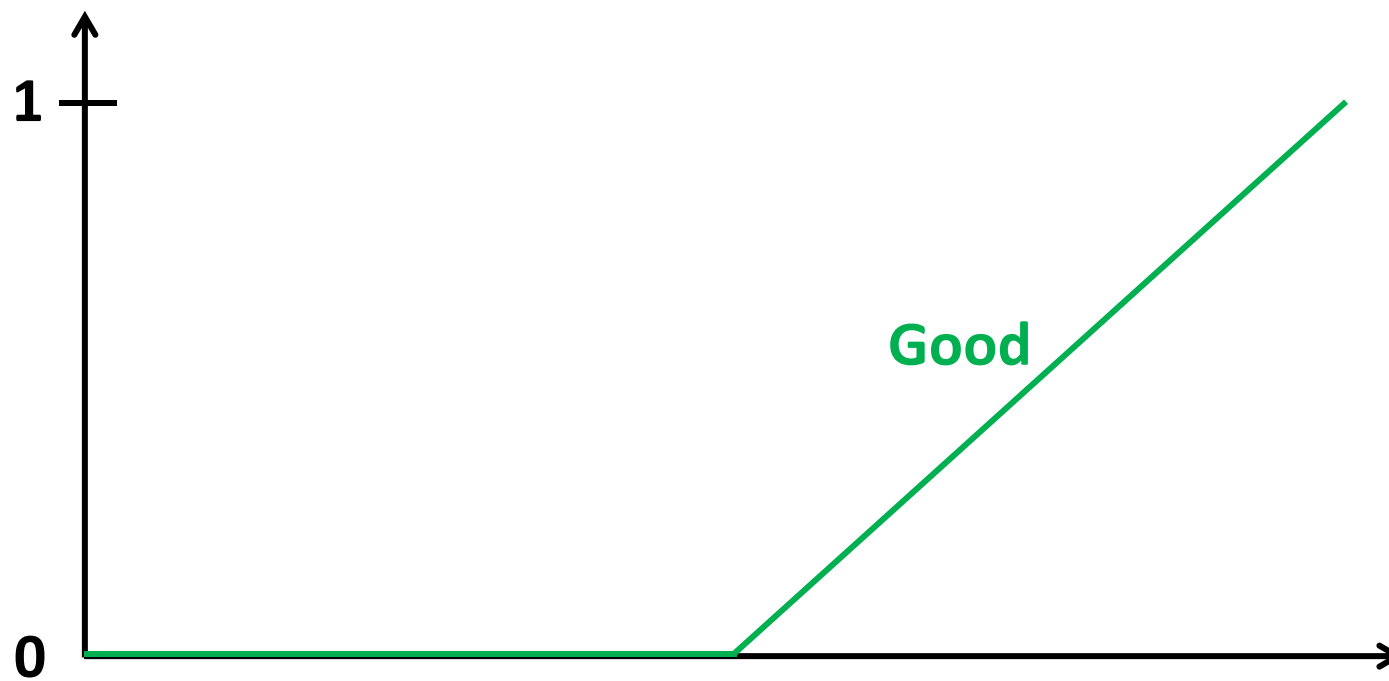
# Degree of Membership



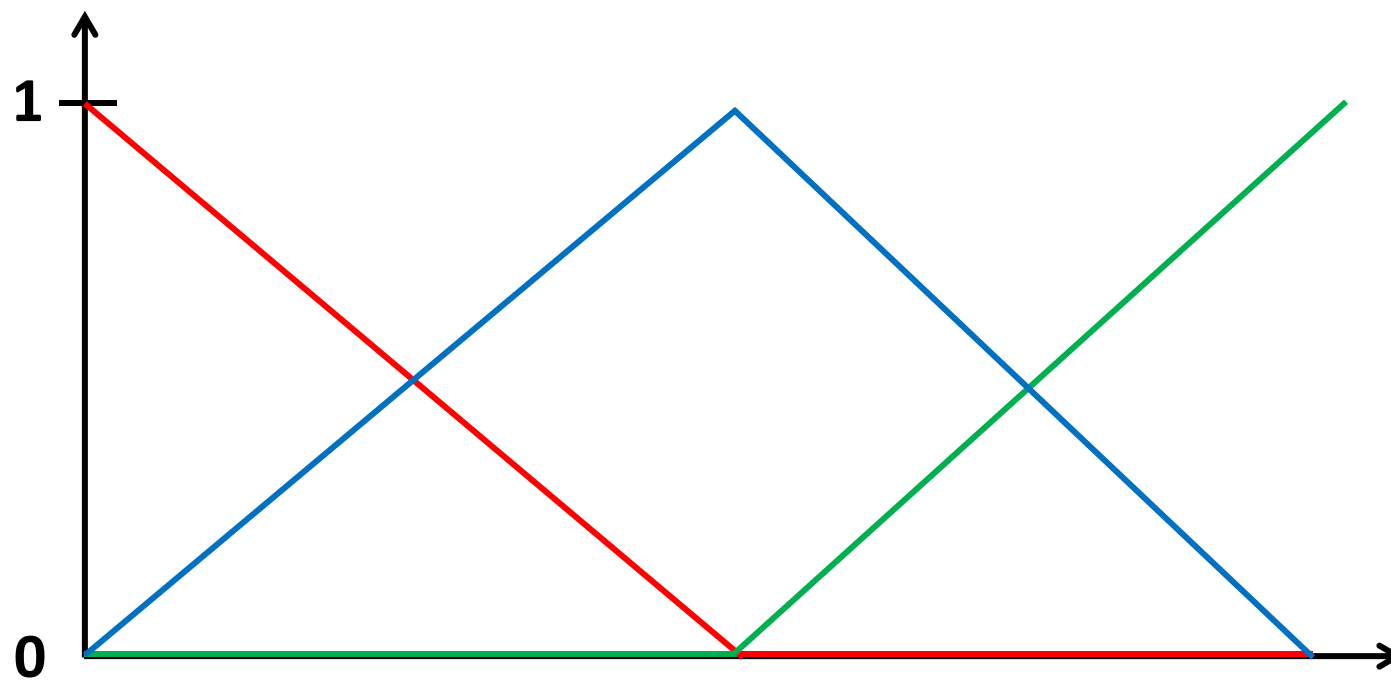
# Degree of Membership



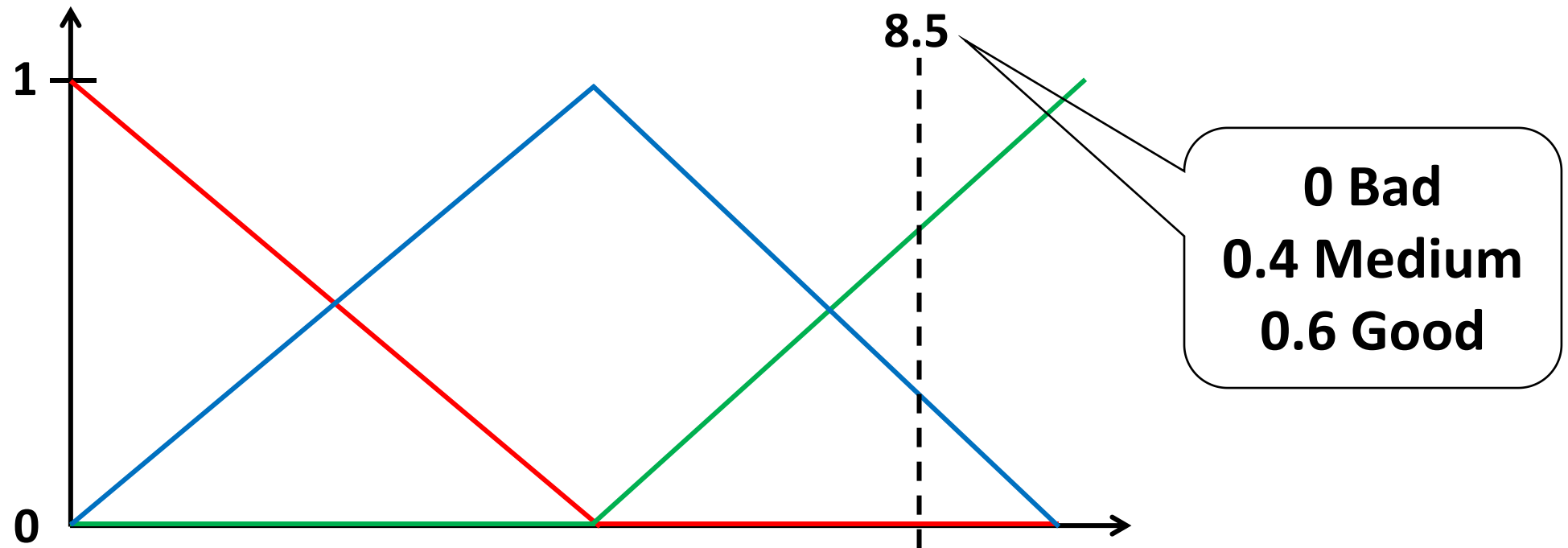
# Degree of Membership



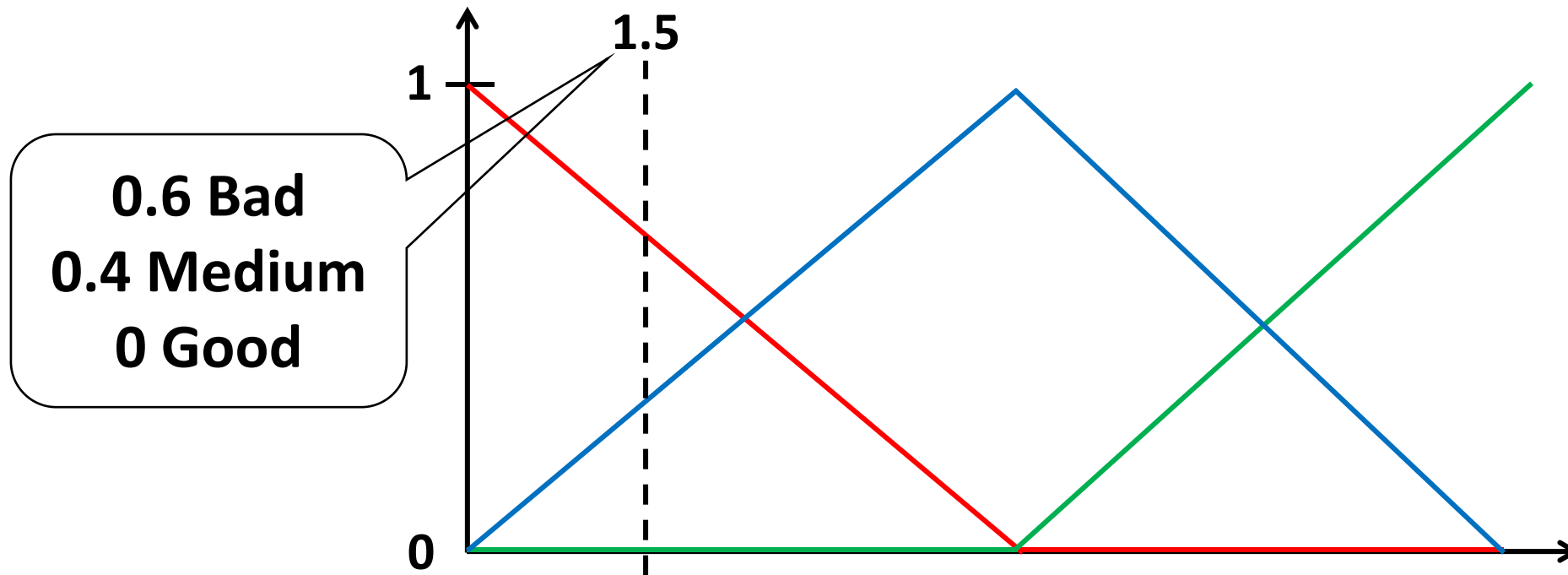
# Degree of Membership



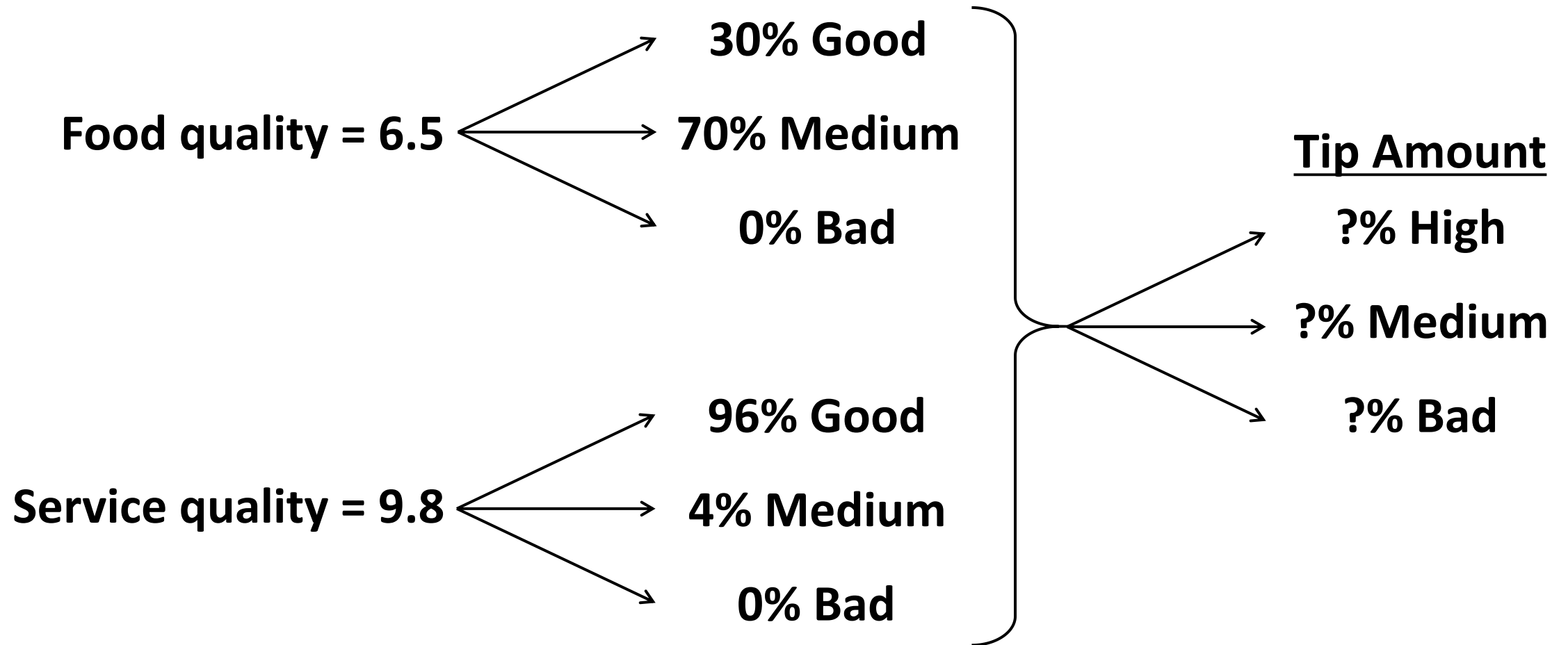
# Degree of Membership



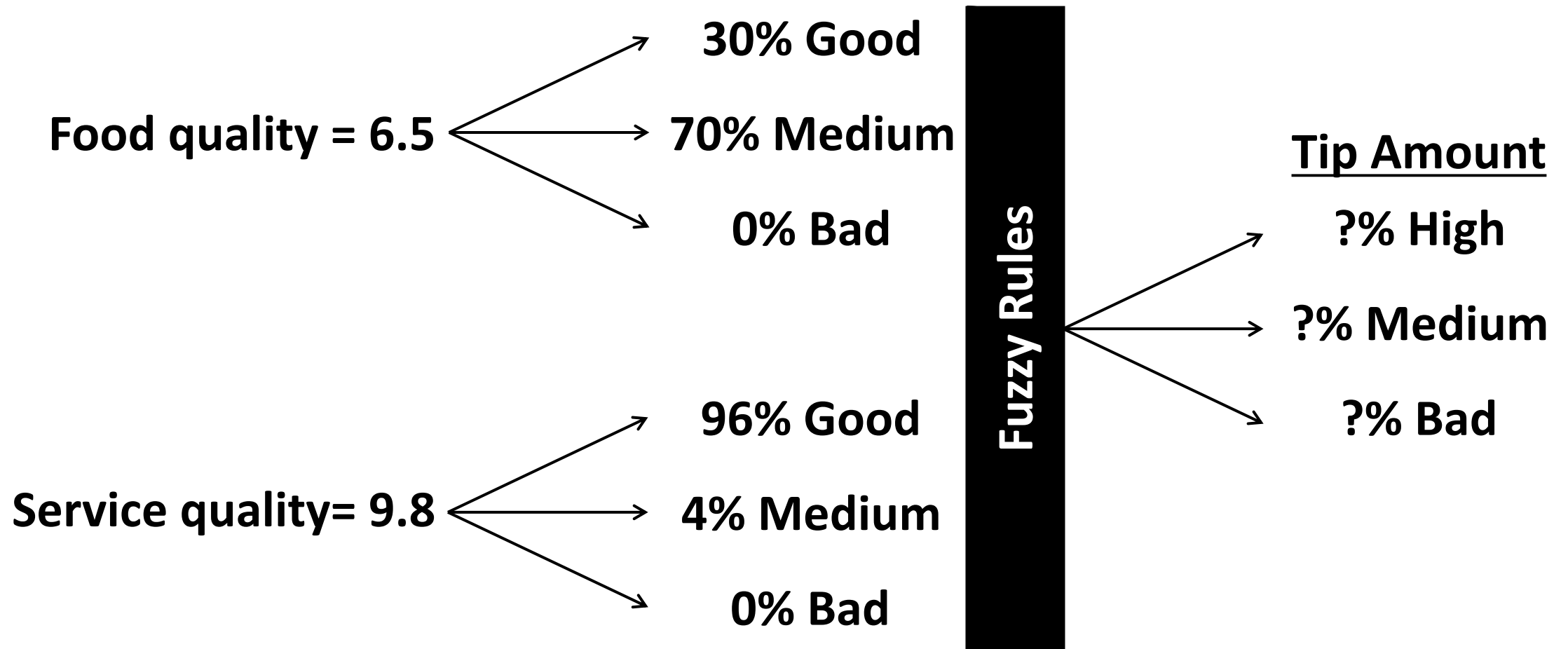
# Degree of Membership



# Fuzzy Rules



# Fuzzy Rules





# Fuzzy Rules

#	Rules
1	If the food is bad OR the service is poor, then the tip will be low
2	If the service is acceptable, then the tip will be medium
3	If the food is great OR the service is amazing, then the tip will be high

# Activation of Fuzzy Rules #1: Antecedent

If the food is bad OR the service is poor...

food_level_lo	serv_level_lo	active_rule_1
0.0	0.0	0.0

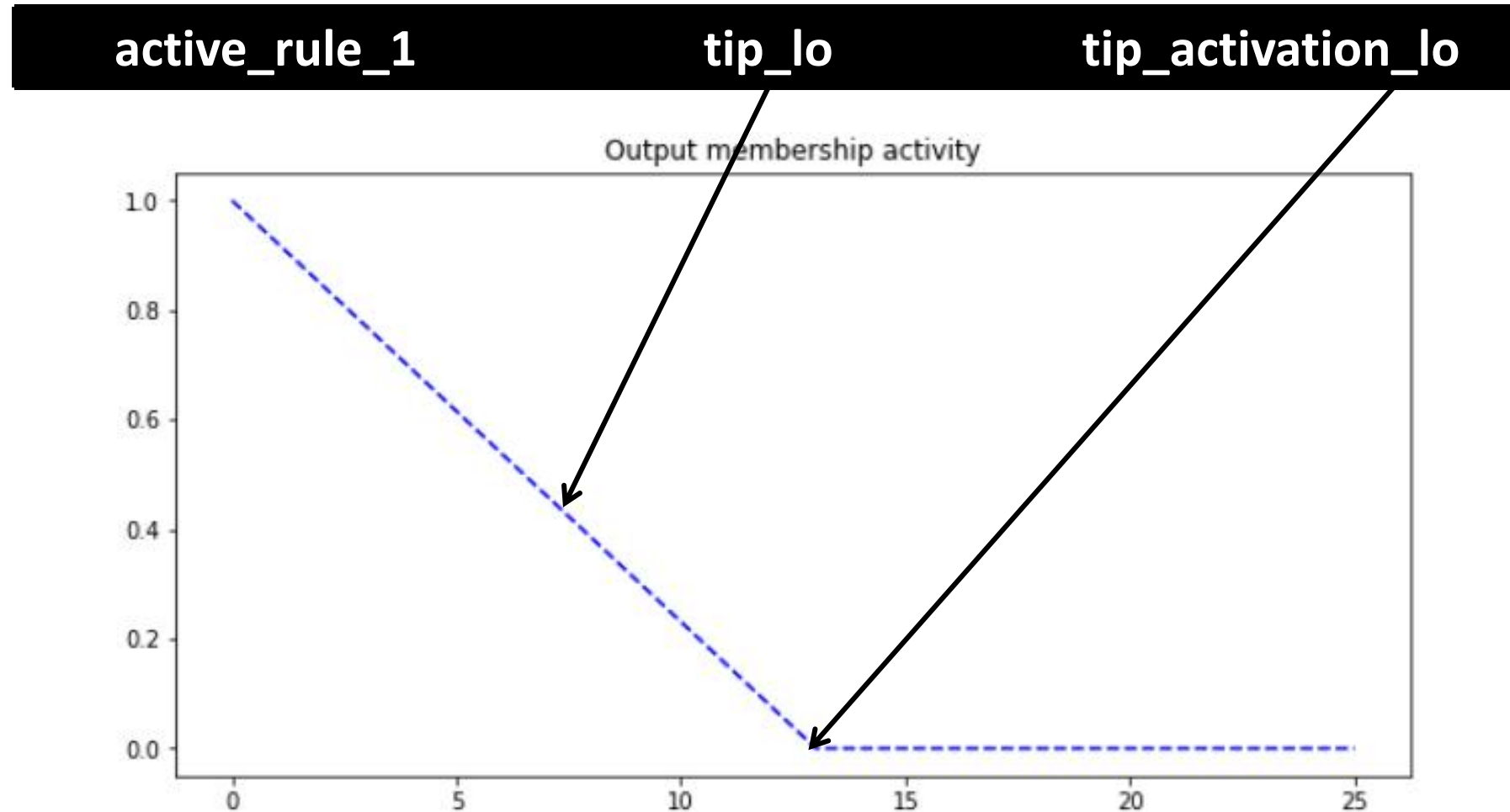
# Activation of Fuzzy Rules #1: Consequent

If input (active\_rule\_1), then output (tip\_lo)

active_rule_1	tip_lo	tip_activation_lo
0.0	1.0	0.0
0.0	0.92307692	0.0
0.0	0.84615385	0.0
0.0	0.76923077	0.0
0.0	0.69230769	0.0
...	...	...
0.0	0.0	0.0
0.0	0.0	0.0
0.0	0.0	0.0

# Activation of Fuzzy Rules #1: Consequent

If input (active\_rule\_1), then output (tip\_lo)



# Activation of Fuzzy Rules #2

If the service is acceptable, then the tip will be medium

<b>serv_level_me</b>	<b>tip_me</b>	<b>tip_activation_me</b>
0.04	0.0	0.0
0.04	0.07692308	0.04
0.04	0.15384615	0.04
0.04	0.23076923	0.04
...	...	...
0.04	0.25	0.04
0.04	0.16666667	0.04
0.04	0.08333333	0.04
0.04	0.0	0.0

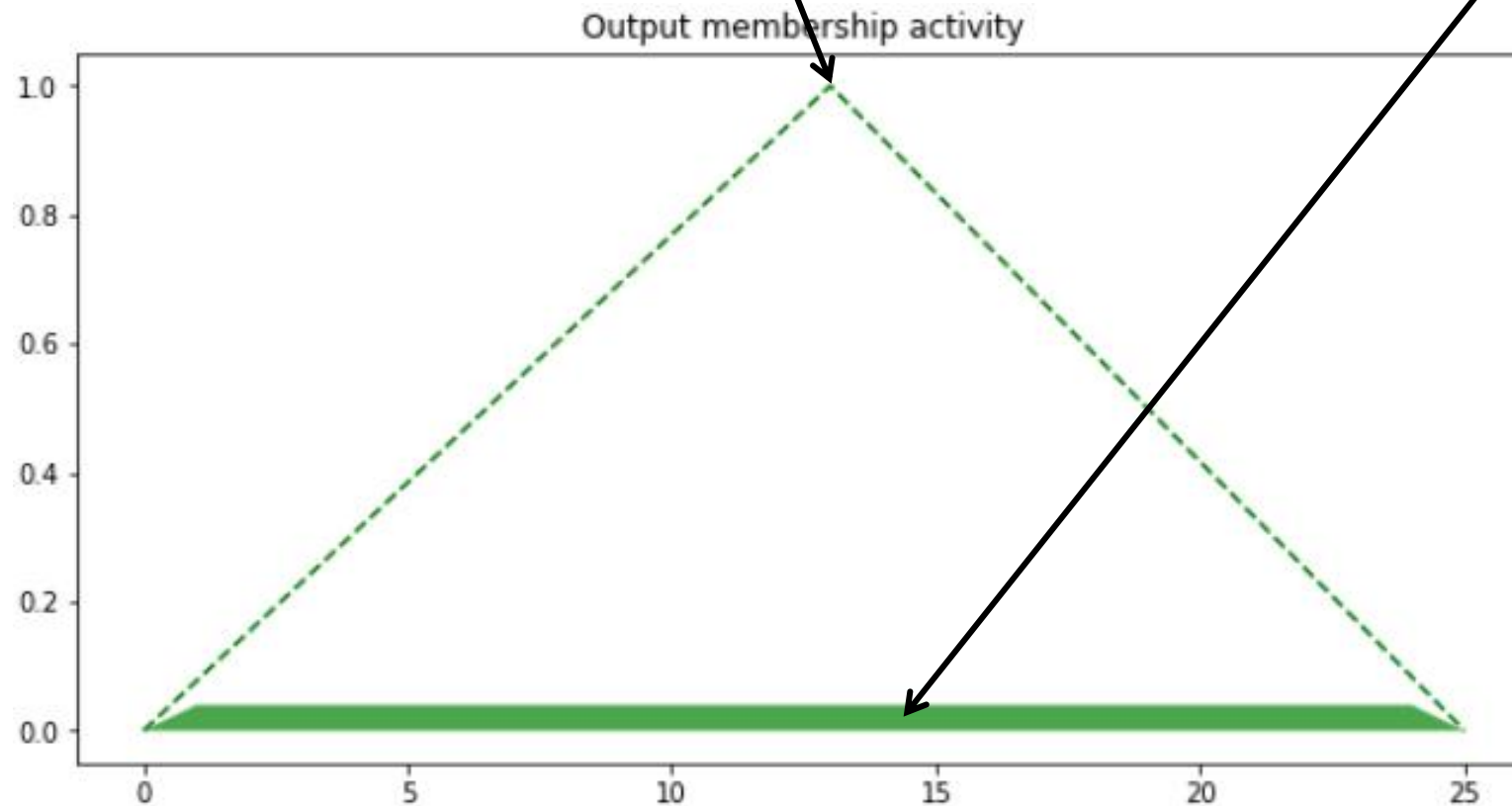
# Activation of Fuzzy Rules #2

If the service is acceptable, then the tip will be medium

**serv\_level\_me**

**tip\_me**

**tip\_activation\_me**



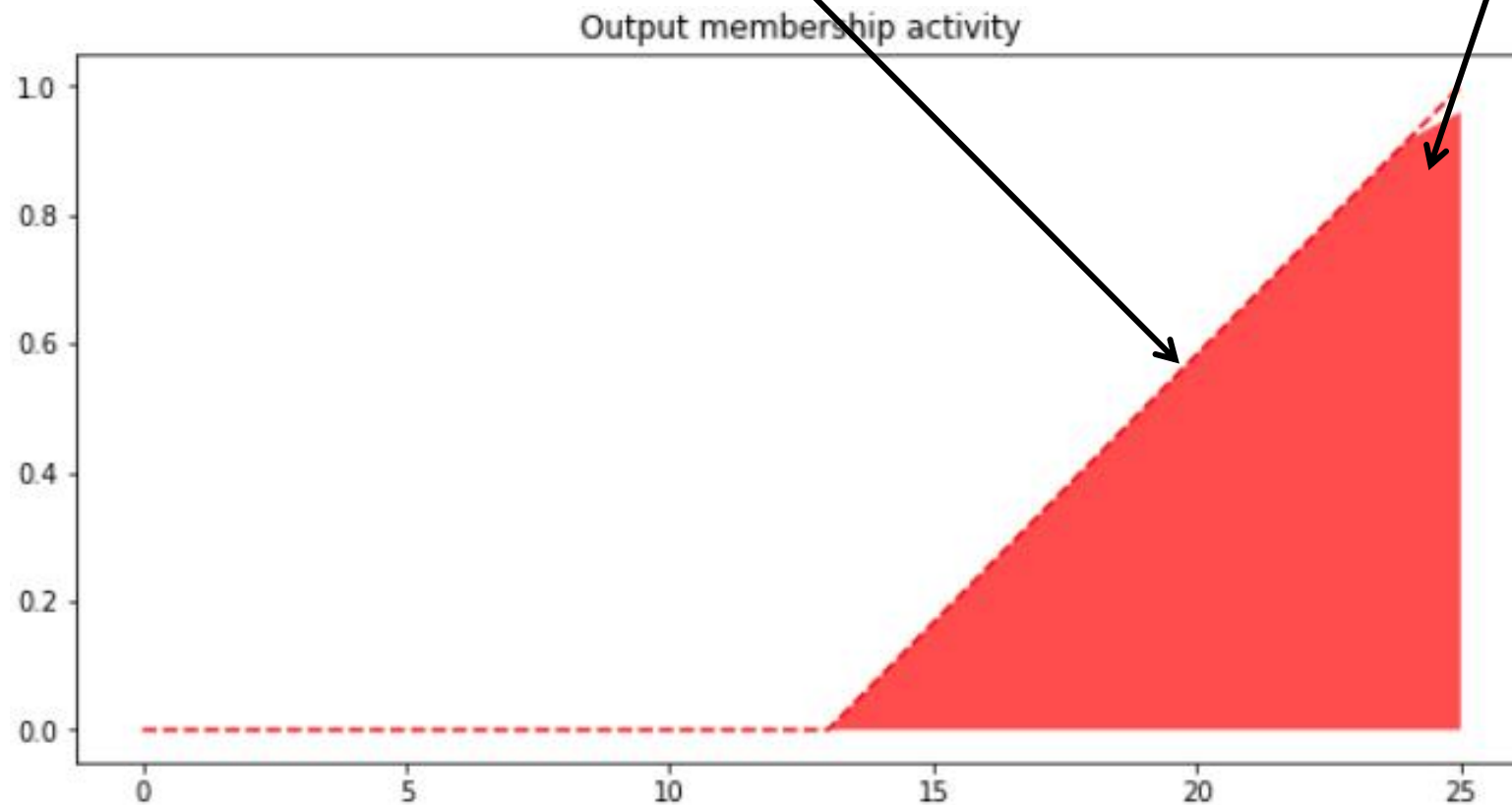
# Activation of Fuzzy Rules #3

If input (active\_rule\_3), then output (tip\_hi)

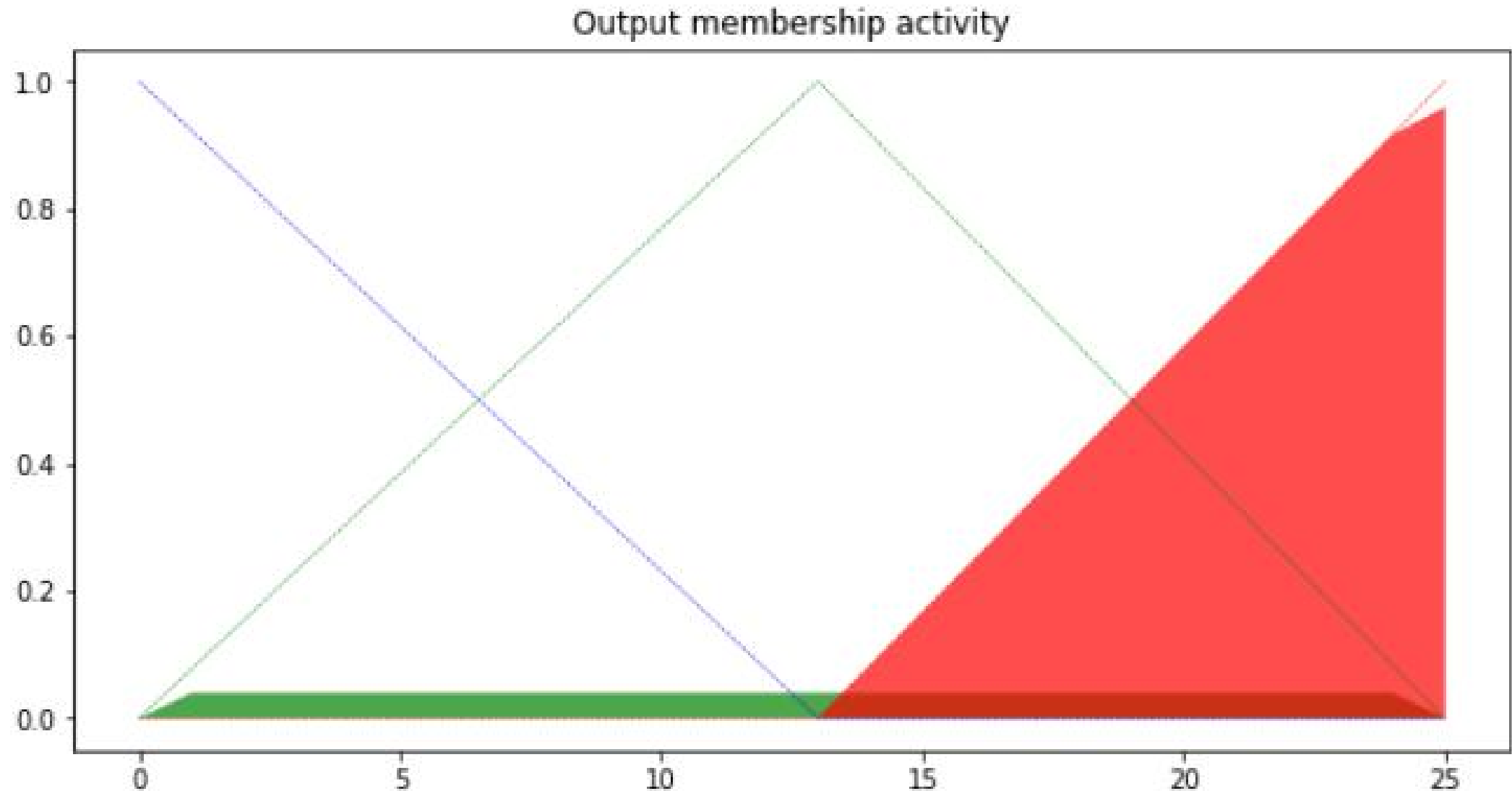
active\_rule\_3

tip\_hi

tip\_activation\_hi



# Aggregating All Output Memberships





# Centroid

