

Fuzzy 10

Murat Osmanoglu

Defuzzification

Mean of Maximum

$$z^* = (a + b) / 2$$

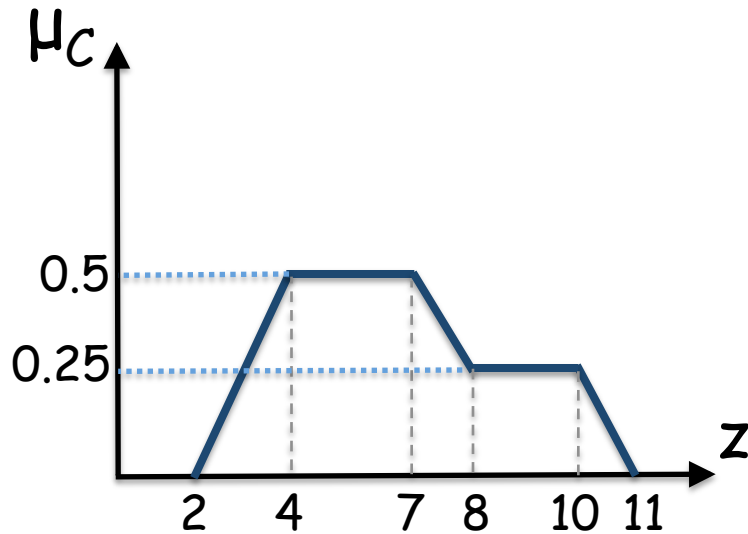
where the membership function gets the maximum value at the interval $[a, b]$

Defuzzification

Mean of Maximum

$$z^* = (a + b) / 2$$

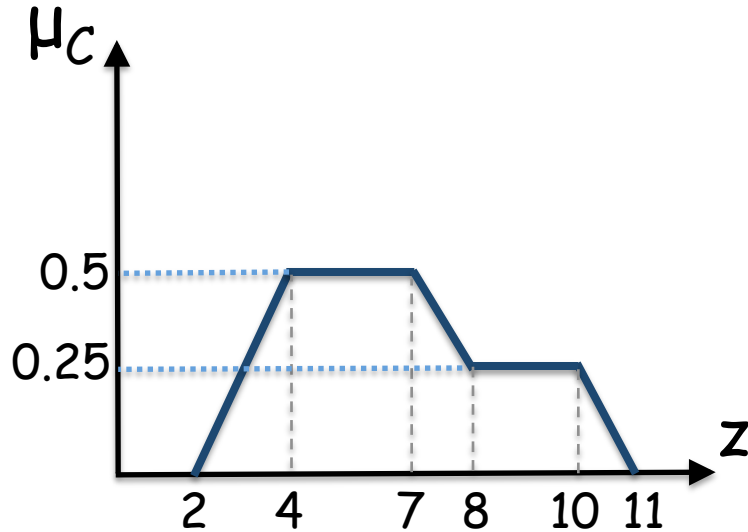
where the membership function gets the maximum value at the interval $[a, b]$



Defuzzification

Mean of Maximum

$z^* = (a + b) / 2$ where the membership function gets the maximum value at the interval $[a, b]$



$$z^* = (4 + 7) / 2 = 5.5$$

Defuzzification

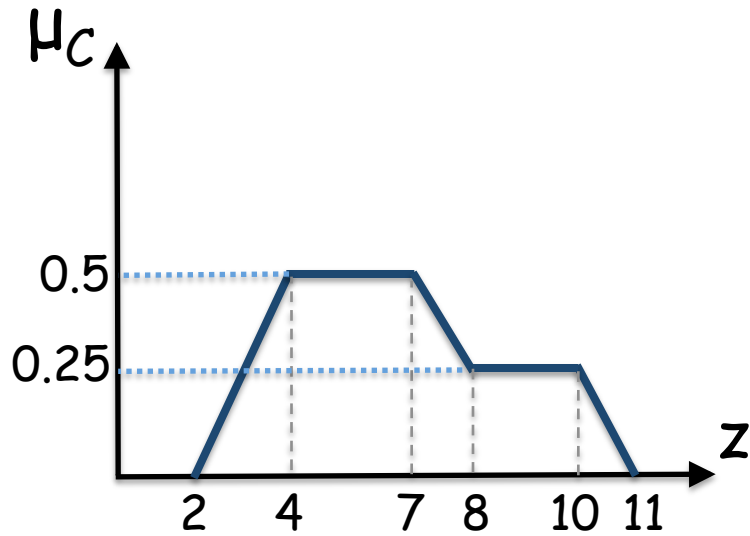
Center of Area

$$z^* = (\sum \mu_C(z_i) \cdot z_i) / (\sum \mu_C(z_i))$$

Defuzzification

Center of Area

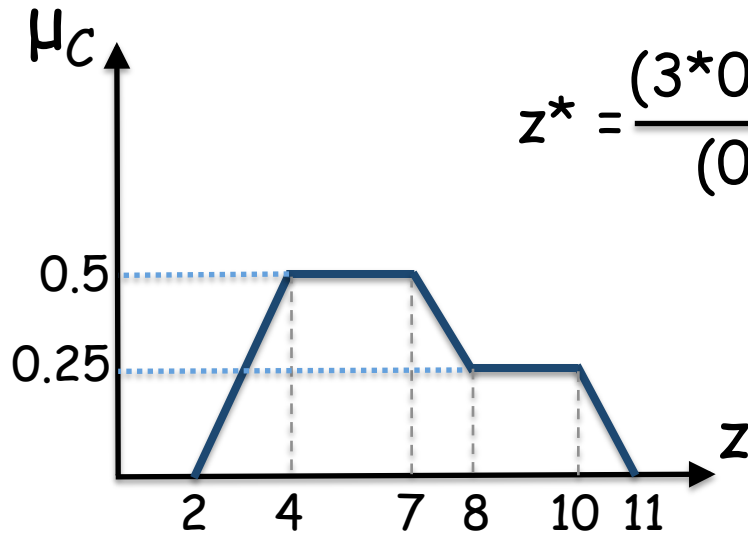
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Defuzzification

Center of Area

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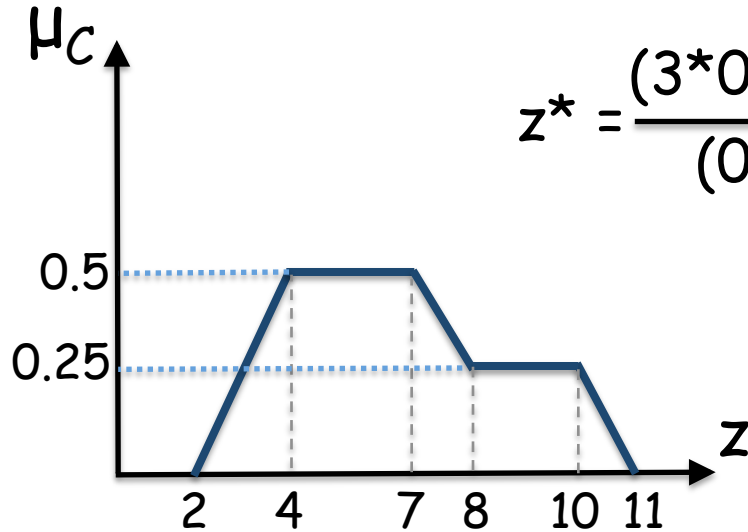


$$z^* = \frac{(3 \cdot 0.25 + 22 \cdot 0.5 + 27 \cdot 0.25)}{(0.25 + 4 \cdot 0.5 + 3 \cdot 0.25)}$$

Defuzzification

Center of Area

$$z^* = (\sum \mu_C(z_i) \cdot z_i) / (\sum \mu_C(z_i))$$



$$z^* = \frac{(3 \cdot 0.25 + 22 \cdot 0.5 + 27 \cdot 0.25)}{(0.25 + 4 \cdot 0.5 + 3 \cdot 0.25)} = 6.33$$

Defuzzification

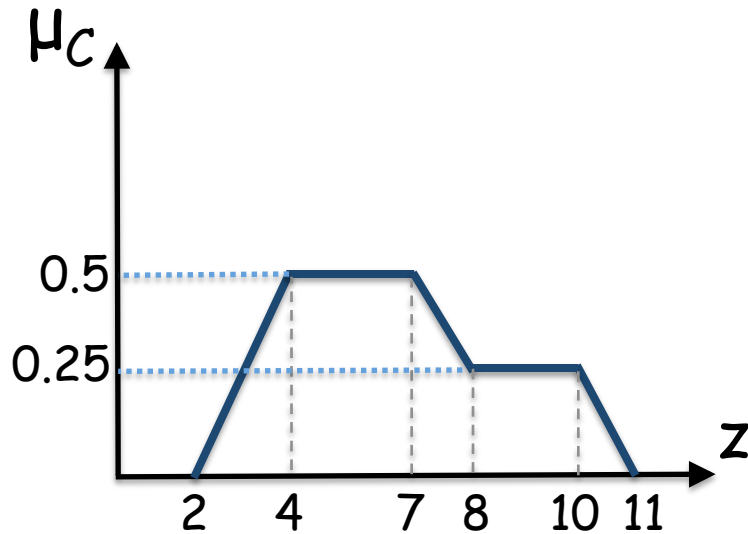
Bisector of Area

z^* such that $I(a, z^*) = I(z^*, b)$ where the membership function gets the nonzero value at the interval $[a, b]$

Defuzzification

Bisector of Area

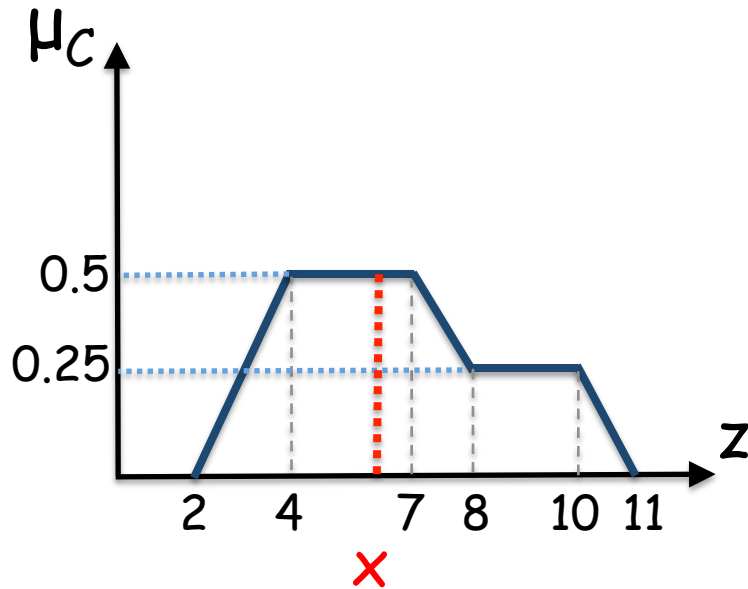
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Defuzzification

Bisector of Area

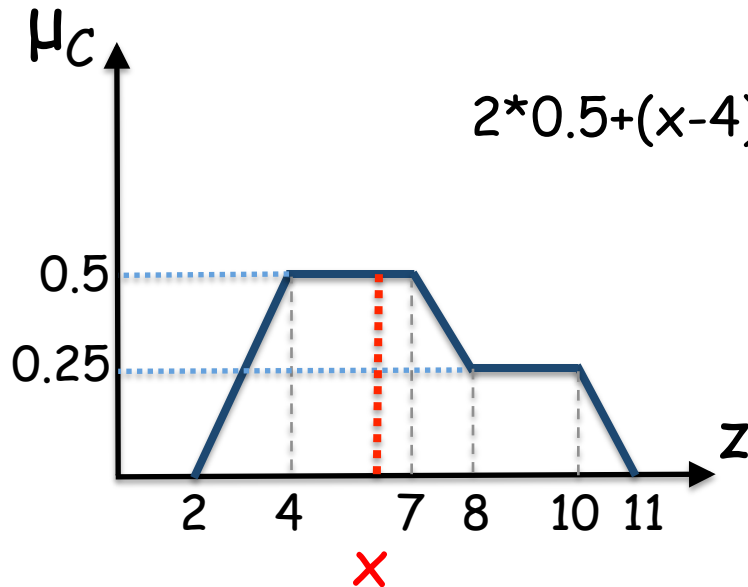
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Defuzzification

Bisector of Area

z^* such that $I(a, z^*) = I(z^*, b)$ where the membership function gets the nonzero value at the interval $[a, b]$

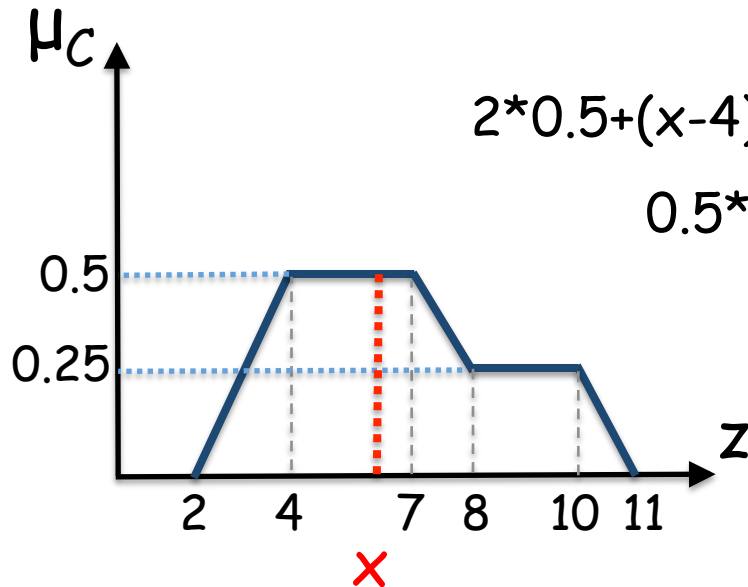


$$2 * 0.5 + (x - 4) * 0.5 = (7 - x) * 0.5 + 0.375 + 2 * 0.25 + 0.125$$

Defuzzification

Bisector of Area

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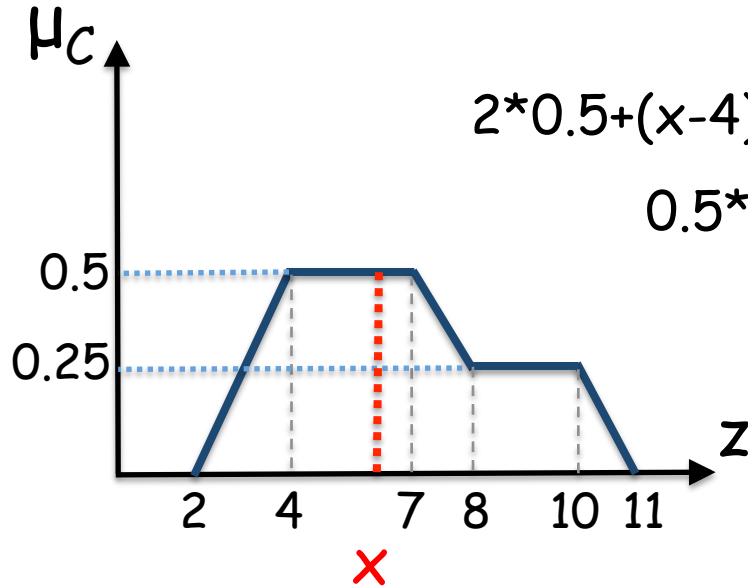


$$2 * 0.5 + (x - 4) * 0.5 = (7 - x) * 0.5 + 0.375 + 2 * 0.25 + 0.125$$
$$0.5 * x - 1 = 3.5 - 0.5 * x + 1$$

Defuzzification

Bisector of Area

z^* such that $I(a, z^*) = I(z^*, b)$ where the membership function gets the nonzero value at the interval $[a, b]$



$$2 * 0.5 + (x - 4) * 0.5 = (7 - x) * 0.5 + 0.375 + 2 * 0.25 + 0.125$$

$$0.5 * x - 1 = 3.5 - 0.5 * x + 1$$

$$x = 5.5$$