

Solution to Homework 3

Task. If the degree of confidence in a statement A is 0.7 and the degree of confidence in a statement B is 0.8, then what are the estimated degrees of confidence in statements $A \& B$ and $A \vee B$? Consider two cases:

- “and”-operation is $\min(a, b)$ and “or”-operation is $\max(a, b)$;
- “and”-operation is $a \cdot b$ and “or”-operation is $a + b - a \cdot b$.

Solution.

- In the first case,

$$f_{\&}(0.7, 0.8) = \min(0.7, 0.8) = 0.7; \quad f_{\vee}(0.7, 0.8) = \max(0.7, 0.8) = 0.8.$$

- In the second case,

$$f_{\&}(0.7, 0.8) = 0.7 \cdot 0.8 = 0.56;$$

$$f_{\vee}(0.7, 0.8) = 0.7 + 0.8 - 0.7 \cdot 0.8 = 1.5 - 0.56 = 0.94.$$