

Membership function as an evaluation

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Abstract

After giving an overview of the different kinds of mathematical forms of the membership functions, we extract the different demands and determine the rational class of the membership functions. From the generalization of our result, we can determine it giving four parameters: The interval $[a, b]$, the sharpness λ , and the decision level ν . We show the correspondence of this membership function to the Zimmermann-Zysno model, and using their empirical data, we also test our mathematical model. We also show the connections between the operators of the evaluation and membership functions, which gives the generalization of this concept in a more general form. As a special case, we can get a linear form.