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Module Management Module Determined By Defosition Procedure

R. Siddikov., A.Husanov., Z. Isakova., J. Tursunov., T. Do'smatov

Teacher of the Kokand state pedagogical, Institute of the Republic of Uzbekistan

ABSTRACT*:* The article explores how illumination control is viewed as a multi-layered network with direct signal transmission. If a vague control system can be described as a network, it is considered possible to teach error in the opposite direction.

KEY WORDS: Neural networks, illumination control, Gaussian function, algorithm, defosition, degradation.

I.INTRODUCTION

In some hypotheses, fuzzy control can be seen as a multi-layered network, with direct signal propagation (feedforward). This term also defines certain classes of neural networks. As long as they have been successfully using the algorithm to propagate the error in the opposite direction, there is no obstacle for any network in this class to use this algorithm. Thus, one can conclude that if a vague control system can be represented as a network, it can be taught by the method of propagation of the error in the opposite direction.

II. METHODOLOGY

We describe the structure of the illumination control module [1; 4].

A. Rules Database. Knowledge, which forms the basis of the correct operation of the modulus control module, is written as a vague rule

$$R^k : IF\left(x_1 = A_1^k \ AND \ldots AND\, x_n = A_n^k\right) THEN\left(y = B^k\right).$$

If we use multiplication as a vague implant,

$$\mu_{A^k \to B^k}(x, y) = \mu_{A^k}(x)\mu_{B^k}(y). \qquad (1)$$

we get the formula.

Illustrated kits using Descartes multiplication can be described as follows

$$\mu_{A^k}(x) = \mu_{A_1^k \times \ldots \times A_n^k}(x) = \mu_{A_1^k}(x_1)\ldots\mu_{A_n^k}(x_n) \qquad (2)$$

B. Summary Block. Let us give a formula that defines the function of the vague set

$$\mu_{\overline{B}^k}(y) = \sup_{x \in X}\left\{\mu_{A'}(x)^T * \mu_{A^k \to B^k}(x, y)\right\} \qquad (3)$$

The exact form of this function depends on the T-norm used, the detection of vaginal implantation, and the methods for transmitting the abstract multiplication of illuminated kits. The T-norm can be expressed as the multiplication in the following view

$$\sup_{x \in X}\left\{\mu_{A'}(x)^T * \mu_{A^k \to B^k}(x, y)\right\} = \sup_{x \in X}\left\{\mu_{A'}(x)\mu_{A^k \to B^k}(x, y)\right\}. \qquad (4)$$

As a result of combining these expressions, the following substitutions can be made:

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$$\mu_{\bar{B}^k}(y) = \sup_{x\in X}\left\{\mu_{A'}(x)^T * \mu_{A^k\to B^k}(x,y)\right\} =$$
$$= \sup_{x\in X}\left\{\mu_{A'}(x)\mu_{A^k\to B^k}(x,y)\right\} =$$
$$= \sup_{x\in X}\left\{\mu_{A'}(x)\mu_{A^k}(x)\mu_{B^k}(y)\right\} =$$
$$= \sup_{x_1,\dots,x_n\in X}\left\{\mu_{A_1'}(x_1)\dots\mu_{A_n'}(x_n)\mu_{A_1^k}(x_1)\dots\mu_{A_n^k}(x_n)\mu_{B^k}(y)\right\}$$

$$\mu_{\bar{B}^k}(y) = \sup_{x_1,\dots,x_n\in X}\left\{\mu_{B^k}(y)\prod_{i=1}^{n}\mu_{A_i'}(x_i)\mu_{A_i^k}(x_i)\right\}. \quad (5)$$

S. Fazzing block. We use the singleton type action

$$A'(x) = \begin{cases} 1, \text{ если } x = \bar{x}, \\ 0, \text{ если } x \neq \bar{x}. \end{cases} \quad (6)$$

Note that only supremum is obtained by formula (5). In this case, expression (5) will look like the following

$$\mu_{\bar{B}^k}(y) = \mu_{B^k}(y)\prod_{i=1}^{n}\mu_{A_i^k}(\bar{x}_i). \quad (7)$$

D. Defragmentation Block. We use the deflation method center average defuzzification accordingly

$$\bar{y} = \frac{\sum_{k=1}^{N}\bar{y}^k\mu_{\bar{B}^k}(\bar{y}^k)}{\sum_{k=1}^{N}\mu_{\bar{B}^k}(\bar{y}^k)}. \quad (8)$$

In the given formula, the center of a vivid set is the point at which it has the maximum value

(4.7) by using formula (4.8),

$$\bar{y} = \frac{\sum_{k=1}^{N}\bar{y}^k\left(\mu_{B^k}(\bar{y}^k)\prod_{i=1}^{n}\mu_{B_i^k}(\bar{x}_i)\right)}{\sum_{k=1}^{N}\left(\mu_{B^k}(\bar{y}^k)\prod_{i=1}^{n}\mu_{A_i^k}(\bar{x}_i)\right)}. \quad (9)$$

equation.
If we consider that ni obtains its maximum value of 1 at a point, that is

$$\mu_{B^k}(\bar{y}^k) = 1, \quad (10)$$

The formula (9) looks like this

$$\bar{y} = \frac{\sum_{k=1}^{N}\bar{y}^k\left(\prod_{i=1}^{n}\mu_{A_i^k}(\bar{x}_i)\right)}{\sum_{k=1}^{N}\left(\prod_{i=1}^{n}\mu_{A_i^k}(\bar{x}_i)\right)}. \quad (11)$$

The final step in the design of the illumination control module is to identify the shape of the illuminated sets. For example, this could be a Gaussian function

$$\mu_{A_i^k}(x_1) = \exp\left[-\left(\frac{x_i - \bar{x}_i^k}{\sigma_i^k}\right)^2\right], \quad (12)$$

where and the parameters have a physical intrusion: - is the center, - The width of the Gaussian curve.
These parameters can be improved in the learning process, allowing for the change in the location and structure of vague sets [1; 4].

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III. MAIN PART

We combine all of the cited elements. We use the (8) defragmentation method, (5) the conclusions, (6) the singleton-like function block, and (12) the corresponding Gaussian function, where the illumination control module looks as follows.

$$\overline{y}=\frac{\sum_{k=1}^{N}\overline{y}^{k}\left(\prod_{i=1}^{n}\exp\left[-\left(\frac{\overline{x}_i-\overline{x}_i^{k}}{\sigma_i^{k}}\right)^{2}\right]\right)}{\sum_{k=1}^{N}\left(\prod_{i=1}^{n}\exp\left[-\left(\frac{\overline{x}_i-\overline{x}_i^{k}}{\sigma_i^{k}}\right)^{2}\right]\right)}. \qquad (13)$$

This expression is one of the most popular and widely used methods of implementing vague systems. Each element of the formula can be represented as a function block (sum, multiplication, Gaussian function), which allows the creation of a multi-layer network following the appropriate combination.

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