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The work presents the method of formal identification of intellectual model of ordinal classification based on the ideas of comparatory identification. According to this model, in the course of structural and parametric identification for each object to be classified, the value of the scalar multi-factor estimate is calculated. Then, this estimate is used to assign an object to a class. The considered identification problem is ill-posed, so a regularization scheme based on the determination of Chebyshev or middle point is used. This leads us to a standard linear programming problem.

Key words: *classification, identification, expert's evaluation, utility evaluation.*

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$$X = \{x_i\}, \quad i = \overline{1,n},$$

$x_i \in X,$ (   )

$$K(x_i) = \langle k_j(x_i) \rangle, \quad j = \overline{1,m}.$$ $K(x_i)$

$x_i \in X,$,

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,   . .

.   ,

$$B = \{b_l\}, \quad l = \overline{1,L}$$

$x_i \in X.$

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.   ($b_1,$

$b_2,$ $b_3,$ $b_4,$ b_5).

$b_5 \succ b_4 \succ b_3 \succ b_2 \succ b_1.$

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$$B = \{b_1, b_2, b_3, b_4, b_5\}.$$

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$$X = \left\{ x_1, x_2, ..., x_n \right\},$$

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$B = \left\{ b_l \right\}$, $l = \overline{1, L}$.

$x_i \in X$,

$K(x_i) = \left\langle k_j(x_i) \right\rangle$, $j = \overline{1, m}$.

, [16],

X , . .

$$b_1 = \left\{ x_1^{b_1}, x_2^{b_1}, ..., x_{n_1}^{b_1} \right\}, \quad b_2 = \left\{ x_1^{b_2}, x_2^{b_2}, ..., x_{n_2}^{b_2} \right\}, \quad ..., \quad b_L = \left\{ x_1^{b_L}, x_2^{b_L}, ..., x_{n_L}^{b_L} \right\},$$

$$\bigcup_{l=1}^{L} b_l = X , \quad \bigcap_{l=1}^{L} b_l = \varnothing .$$

(   )   .

[17]   (   ) $x_i \in X$, $i = \overline{1, n}$,

$P(x_i) = F\left[K(x_i) \right]$,   : $x_t, x_r \in X$ $x_t \succ x_r$,

$P(x_t) > P(x_r)$.

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$$b_1 \prec b_2 \prec ... \prec b_L ,$$

$$P(x_{i_1}^{b_1}) < P(x_{i_2}^{b_2}) < ... < P(x_{i_L}^{b_L}) ,$$

$$\forall x_{i_1}^{b_1} \in b_1 , \, i_1 \in I_{n_1} ; \; \forall x_{i_2}^{b_2} \in b_2 , \, i_2 \in I_{n_2} ; \; ...; \; \forall x_{i_L}^{b_L} \in b_L , \, i_L \in I_{n_L} .$$

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$$P(x^{b_1}) < P(x_{i_1}^{b_1}) < P(x^{b_1}) < P(x^{b_2}) < P(x_{i_2}^{b_2}) < P(x^{b_2}) < ...$$

$$... < P(x^{b_L}) < P(x_{i_L}^{b_L}) < P(x^{b_L}) , \tag{1}$$

$$i_1 = \overline{1, n_1} , \; i_2 = \overline{1, n_2} , \; i_L = \overline{1, n_L} ; \forall x_{i_l}^{b_l} \neq x^{b_l} , \; \forall x_{i_l}^{b_l} \neq x^{b_l} , \; l = \overline{1, L} ,$$

x^{b_l} , x^{b_l} –

b_l , $l = \overline{1, L}$.

(1)   :

$$P(x^{b_1}) - P(x^{b_1}) < 0 ;$$

$$P(x^{b_1}) - P(x_{i_1}^{b_1}) < 0 , \; i_1 = \overline{1, n_1} ;$$

$$P(x_{i_1}^{b_1}) - P(x^{b_1}) < 0 , \ i_1 = \overline{1, n_1} ;$$

$$P(x^{b_1}) - P(x^{b_2}) < 0 \frac{1}{2} ;$$

$$P(x^{b_2}) - P(x^{b_2}) < 0 ; \hspace{3cm} (2)$$

$$P(x^{b_2}) - P(x_{i_1}^{b_2}) < 0 , \ i_2 = \overline{1, n_2} ;$$

$$P(x_{i_1}^{b_2}) - P(x^{b_2}) < 0 , \ i_2 = \overline{1, n_2} ;$$

$$P(x^{b_2}) - P(x^{b_3}) < 0 ;$$

$$P(x^{b_L}) - P(x^{b_L}) < 0 ;$$

$$\forall x_{i_l}^{b_l} \neq x^{b_l} , \ \forall x_{i_l}^{b_l} \neq x^{b_l} , \ l = \overline{1, L} ,$$

$$P(x_i) , \ x_i \in X .$$

-                [18]

$$P(x_i) = \sum_{j=1}^{m} a_j k_j(x_i) + \sum_{j=1}^{m} \sum_{q=1}^{m} a_{jq} k_j(x_i) k_q(x_i) + \dots , \hspace{1.5cm} (3)$$

$k_j(x_i) -$.

(3)   ,

[19].

(3)

$a_j , \ a_{jq} , \ \dots .$

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,

$$P(x_i) = \sum_{j=1}^{s} a_j k_j(x_i) , \ i = \overline{1, n} ,$$

$a_j \ -$,

$$0 \le a_j \le 1, \quad \forall j = \overline{1, m}, \quad \sum_{j=1}^{m} a_j = 1; \qquad k_j(x_i) \qquad -$$

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$k_j(x_i)$,

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5). $k_j^{\,x}(x_i)$ j-   ,
              $k_j\ (x_i)\ -$.

$k_j(x_i)$ $\mathsf{r}_i,$

                                                                              .

                                                                                    $k_j(x_i)$ (3)

                                          (2),

                                                                        $P(x_i)$

                                          .

                                                                                          (2)

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                      .   (2)

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5.

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                                                            $P(x_i)$

            ,   . $x_i \in X$ $b_l,$
$l = \overline{1,L}$ $P(x^{b_l}) \le P(x_i) \le P(x^{b_l})$.

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