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Areej Adnan Abed

Al-Maaref University College, Republic Iraq

FUNCTIONAL STRUCTURE OF COMPARATOR'S PREDICATE IN THE COMPARTMENT IDENTIFICATION METHOD

Intelligence theory studies the connection between the subjective and objective worlds perceived and analyzed by human intellect. Therefore, on the one hand, intelligence theory must correspond to the objective requirements adopted in physical sciences as science; on the other hand, it is compelled to rely on introspective intelligence data. Like other exact sciences, intelligence theory needs a special mathematical language corresponding to the intelligence theory object; special methods suitable for objective study of human intelligence. The basic method of objective analysis and modeling of human intelligence is comparative identification method. In the method the subject realizes a certain final predicate by his behavior. In accordance with the method, an experimental study of this predicates' properties is conducted, then, basing on the results a mathematical the subject's reactions model subjective states of its intelligence is constructed. Comparative identification method accurate of isomorphism allows t find a function transforming physical situations into subjective images generated by them. In this article a comparator predicate decomposition is performed and its functional structure is analyzed, the process of the human intellect subjective states multiplicities factorization is studied.

Keywords: intelligence theory; algebra of finite predicates; comparative identification.

Introduction

This work is a continuation of articles [1-4] which deals with comparative identification apparatus is developed. The main predecessors of this article were the following: monograph [5], which deals with algebra of finite predicates was developed – intelligence theory mathematical basis; articles [6, 7] where some special comparative identification issues, created within intelligence theory framework for person psychological states modeling were considered.

Here comparator predicate decomposition is performed and its functional structure is analyzed, the process of person subjective states set factorization is studied.

1. Analysis of the comparator predicate functional structure

Let's consider f function definition method on a concrete example according to existing P predicate. Let $A=\{a_1,...,a_7\}$, $B=\{b_1,...,b_7\}$. P predicate is set up by the following formula:

$$P(X,Y)=X^{a_1}Y^{b_3}\vee X^{a_1}Y^{b_4}\vee X^{a_2}Y^{b_1}\vee X^{a_2}Y^{b_2}\vee \vee X^{a_3}Y^{b_1}\vee X^{a_3}Y^{b_2}\vee\vee X^{a_4}Y^{b_5}\vee X^{a_4}Y^{b_6}\vee \vee X^{a_5}Y^{b_3}\vee X^{a_5}Y^{b_4}\vee X^{a_6}Y^{b_3}\vee X^{a_7}Y^{b_3}. \quad (1)$$

We find R partition layers of A set by calculating corresponding to them predicates $V_{a_1}(X)+V_{a_7}(X)$ from the formula (8) [4]. Find predicate

$$V_{a_1}(X)=(P(X,b_1)\sim P(a_1,b_1))...(P(X,b_6)\sim \sim P(a_1,b_6))=(X^{a_2}\vee X^{a_3}\sim 0)(X^{a_2}\vee X^{a_3}\sim \sim 0)(X^{a_1}\vee X^{a_5}\vee X^{a_6}\vee X^{a_7}\sim 1)(X^{a_1}\vee \vee X^{a_5}\sim 1)(X^{a_4}\sim 0)(X^{a_4}\sim 0)=\overline{X^{a_2}\vee X^{a_3}}\wedge \wedge(X^{a_1}\vee X^{a_5}\vee X^{a_6}\vee X^{a_7})(X^{a_1}\vee X^{a_5})\overline{X^{a_4}}= =X^{a_1}\vee X^{a_5}.$$

Finally obtain:

$$V_{a_1}(X)=X^{a_1}\vee X^{a_5}. \quad (2)$$

Analogical define the other predicates:

$$V_{a_2}(X)=X^{a_2}\vee X^{a_3}, \quad (3)$$

$$V_{a_3}(X)=X^{a_2}\vee X^{a_3}, \quad (4)$$

$$V_{a_4}(X)=X^{a_4}, \quad (5)$$

$$V_{a_5}(X)=X^{a_1}\vee X^{a_5}, \quad (6)$$

$$V_{a_6}(X)=X^{a_6}\vee X^{a_7}, \quad (7)$$

$$V_{a_7}(X)=X^{a_6}\vee X^{a_7}. \quad (8)$$

We see found division layers repeated. Selecting all different classes' pairs we form partition

$$R=\{\{a_1,a_5\},\{a_2,a_3\},\{a_4\},\{a_6,a_7\}\}.$$

Introduce notations for adjacent layers: $\alpha_1=\{a_1,a_5\}$, $\alpha_2=\{a_2,a_3\},$, $\alpha_3=\{a_4\},$, $\alpha_4=\{a_6,a_7\}$ connection between the entered layers and their names is written by the following predicate:

$$F(X,x)=(X^{a_1}\vee X^{a_5})x^{\alpha_1}\vee(X^{a_2}\vee \vee X^{a_3})x^{\alpha_2}\vee X^{a_4}x^{\alpha_3}\vee(X^{a_6}\vee X^{a_7})x^{\alpha_4}. \quad (9)$$

x variable meanings serve as R partition layers names. Relation corresponding to the predicate F binds variables X and x, it follows that it implies $x=f(X)$ implicit function. F predicate is bound with f function as follows: if $F(X,x)=1$, then $x=f(X)$, if

$F(X,x)=0$, then $x \neq F(X)$. Express f function in an explicit form [4]:

$$x^{\alpha_1} = X^{a_1} \vee X^{a_5}, \quad (10)$$

$$x^{\alpha_2} = X^{a_2} \vee X^{a_3}, \quad (11)$$

$$x^{\alpha_3} = X^{a_4}, \quad (12)$$

$$x^{\alpha_4} = X^{a_6} \vee X^{a_7}. \quad (13)$$

R set of all partition layers names serve as M set, i.e. $M = \{\alpha_1,...,\alpha_4\}$. Formally describe M set with a predicate:

$$M(x) = x^{\alpha_1} \vee x^{\alpha_2} \vee x^{\alpha_3} \vee x^{\alpha_4}. \quad (14)$$

Analogically find g function form. S partition layers of B set are found by calculating $W_{b_1}(Y) + W_{b_6}(Y)$ predicates from the formula (9) [4]. As a result we obtain

$$W_{b_1}(Y) = Y^{b_1} \vee Y^{b_2}, \quad (15)$$

$$W_{b_2}(Y) = Y^{b_1} \vee Y^{b_2}, \quad (16)$$

$$W_{b_3}(Y) = Y^{b_3}, \quad (17)$$

$$W_{b_4}(Y) = Y^{b_4}, \quad (18)$$

$$W_{b_5}(Y) = Y^{b_5} \vee Y^{b_6}, \quad (19)$$

$$W_{b_6}(Y) = Y^{b_5} \vee Y^{b_6}. \quad (20)$$

We form $S = \{\{b_1,b_2\},\{b_3\}, \{b_4\},\{b_5,b_6\}\}$ partition. We introduce partition layers notation of the

$$S: \beta_1 = \{b_1,b_2\}, \beta_2 = \{b_3\}, \beta_3 = \{b_4\}.$$

Connection between names and S is written in the form of the following predicate:

$$G(Y,y) = (Y^{b_1} \vee Y^{b_2})y^{\beta_1} \vee Y^{b_3}y^{\beta_2} \vee \vee Y^{b_4}y^{\beta_3} \vee (Y^{b_5} \vee Y^{b_6})y^{\beta_4}. \quad (21)$$

Y variable values serves as S partition layers names. The relation corresponding to G, predicate binds variables Y and y, consequently it implies $y = g(Y)$. G predicate is bound with g function as follows: if $G(Y,y)=1$, then $y = g(Y)$, if $G(Y,y)=0$, то $y \neq g(Y)$. Equation (21) is replaced with a set of equations, which expresses $y = g(Y)$ in an explicit form:

$$y^{\beta_1} = Y^{b_1} \vee Y^{b_2}, \quad (22)$$

$$y^{\beta_2} = Y^{b_3}, \quad (23)$$

$$y^{\beta_3} = Y^{b_4}, \quad (24)$$

$$y^{\beta_4} = Y^{b_5} \vee Y^{b_6}. \quad (25)$$

The role of N set is represented by S set of all partition layers, i.e. $S = \{\beta_1,...,\beta_4\}$. Formally N set is described by the predicate:

$$N(y) = y^{\beta_1} \vee y^{\beta_2} \vee y^{\beta_3} \vee y^{\beta_4}. \quad (26)$$

Consider L predicate definition method which appears in the expression (1) [4]. Such predicate exists for any P. It is possible to calculate L predicate by existing P predicate and existing f and g functions by the following formula:

$$L(x,y) = \exists X \in A Y \in B(P(X,Y)F(X,x)G(Y,y)). \quad (27)$$

In our example, we get the formula for L predicate, inserting (15) P, F and G predicates according to expressions (1), (9) and (21):

$$L(x,y) = x^{\alpha_1}y^{\beta_2} \vee x^{\alpha_1}y^{\beta_3} \vee x^{\alpha_2}y^{\beta_1} \vee x^{\alpha_3}y^{\beta_4} \vee x^{\alpha_4}y^{\beta_2}. \quad (28)$$

Definition of L predicate due to existing P, f and g can be also performed for the formula

$$L(x,y) = P(f^{-1}(x), g^{-1}(y)), \quad (29)$$

which is shortened dependence formula (27). Expression $f^{-1}(x)$ one of $X \in A$ elements (no matter what definitely), meeting $x = f(X)$ condition. $g^{-1}(y)$ record analogically stands for. Congruence (29) directly follows from (1) [4].

Also from (1) [4] congruence follows dependence

$$P(X,Y) = \exists x \in M \exists y \in N(L(x,y)F(X,x)G(Y,y)), \quad (30)$$

with the help of which P predicate can be calculated from existing L predicate and existing f and g functions. Dependence (30) is a congruence complete logical notation (1) [4]. In our example, substituting in (30) L, F and G predicates according to (28), (15), (21) expressions formula (1) is obtained. It is also possible to define P predicate by L, f and g by the formula (1) [4]. Pay attention to that important fact that variable values x and y serve not R and S partition layers, but their names. These names can be arbitrary chosen in an way, if only the condition is fulfilled: each partition class must correspond exactly to one name. Let M and M' be two situations name perception systems, x and x' are element of these systems. Name the first name systems as old, the second – new. Bijection

$$x' = \varphi(x), \quad (31)$$

reflecting M set for M' set, by which you can replace old notation x for new x' exists.

Similarly, if N and N' are two texts sence meaning name systems, y and y' are elements of these systems, then bijection $y' = \psi(y)$ (e), reflecting N set for N' set, which can replace old names with new y' names exists. Let old name systems P predicate is written in (1) [4] form, and in new – in the form

$$P(X,Y) = L'(f'(X), g'(Y)) = L'(x', y'). \quad (32)$$

Then f, f' and g, g' functions isomorphism, as well as L, L' predicate isomorphisms :

for $\forall X \in A f'(X) = \varphi(f(X))$;

for $\forall Y \in B g'(Y) = \psi(g(Y))$;

for $\forall x \in M, y \in N L(x, y) = L'(\varphi(x), \psi(y))$ exists.

It is important to note that in f and g practical functions form determination it is necessary to distinguish many partition layers from these layers names (i.e. to distinguish R and M multiplicities, as well as S and multiplicities N), although, essentially, it seems to be the same. Formerly, in the question theoretical analysis, we did not distinguish these multiplicities. The same have to be done also at meaningful interpretation of these multiplicities and namely to distinguish situations perception as subjective formations from situation layers which formally represent them, characterizing perceptions as physical entities, as well as to distinguish text meanings as subject's subjective thoughts from the corresponding texts classes as objective characteristics of the same thoughts. Texts perceptions of situations and meanings are subjective, texts and situations layers are objective. We can say that situations and texts layers names, which we had to introduce in the example considered above are situations subjective layers analogues and texts layers. This suggests that the subjective states of a person play the role of class names that are revealed to them in the surrounding physical world. It can be assumed that human subjective states are referred to ideal formations only for the reason that they are used in the role of physical objects names.

Subjective states as physical objects names are ideal. But they can be considered as physical objects if taken separately. There is no doubt, that subjective states in humans' brain are realized in the form of some material structures and processes that have not been studied so far. Having been materialized (in accordance with its mathematical description) in a computer, Subjective states will also be embodied in quite definite physical objects and processes (for example, into magnetic dipoles fixed in a computer memory). And yet, even in the "soulless" machine, these human subjective states artificial copies will not cease to be ideal formations, because even there they act as the names of physical objects surrounding the world machine. Thus, those philosophers who warn against putting an insurmountable barrier between the material and the ideal [5] are right. The "doubling" of the world occurs only for the reason that any mechanism analyzing physical reality, whether it be a person or a "soulless" computing device, is forced to operate in the process of this analysis not by the classes of material objects themselves, but by their names. A physical object used in the role another physical object name must be considered in its quality as something ideal.

However, if you change the point of view and treat the name simply as an object existing in itself, it will immediately turn into a material entity. In this respect, object's assignment to the category of material or idea entirely depends on the role that this object plays. If this object acts as the name of another object, this quality it is ideal; what is the root cause of the world "doubling", it's dividing into material and ideal? Apparently, the fact is that when there is a predicates set, then if you do not enter names for these predicates included into this set, then there is no possibility formally to express it.

Disjunction operation is not appropriate for this. For example, excluding from the right-hand side of equation (1) predicates names (along with recognition predicates, in which these names appear in the role of indicators), obtain the formula:

$$X^{a_1} \vee X^{a_5} \vee X^{a_2} \vee X^{a_3} \vee X^{a_4} \vee X^{a_6} \vee X^{a_7} .$$

It is impossible to isolate the original predicates from it since they disappeared, having completely dissolved into their disjunction. If predicate names are not introduced, then initial predicates obtainment is entirely possible. For example, assume $x = \alpha_1$. Substituting this value into the right-hand side of (9) equation, obtain $X^{a_1} \vee X^{a_5}$ predicate, corresponding to α_1 name.

Perhaps here we meet some fundamental nature limitation: if some mechanism that produces effective signal processing deals with systems (in other words, with a set of systems), then introduction of the names of for the predicates (multiplicities) of these systems becomes inevitable. If you dismantle such a mechanism, then it will necessarily reveal physical structures that actually reproduce these names. It is very likely, that without using predicates names effective operation of any indicated assignment mechanism is impossible. Namely in this respect ideal objects appear in fairly complex systems (i.e. names) appear. Operating ideal states is not exclusive human privilege. In any "soulless" machine, which performs the same work so a human does. Thus, there is no reason to believe that only people can feel and think (i.e., operate ideal states), but never machines.

2. Awareness predicate as membership

In the first part of the article we decomposed comparator predicate $t = P(X, Y)$ into three parts: perception function $x = f(X)$, understanding function $y = g(Y)$ and awareness predicate $t = L(x, y)$. Along with this we also introduced intermediate signals x and y, correspondently characterizing situation perception X and text sense Y. Formulating P predicate decomposition problem, we were guided by the conviction of each person, based on self-observation, about the presence of perceptions and thoughts in his mind arising from the action of situations and texts. This problem is solved by a purely physical method without subjective data involving. M set of all x signals, N set of all y signals, f and g functions, as well as predicate are uniquely determined by the well-known predicate P, set at $A \times B$, except for the choice of notation.

The researcher has a right to choose sets A and B of situations and texts arbitrarily, at our discretion with a set task. Knowledge of the internal structure of situations and texts is not required, they are considered as simple elements (points) of sets A and B. It is assumed only that the researcher is able to identify or distinguish any two situations from the set and any two texts from the set. In other words, it is postulated that on P and P sets equality predicates are defined. Any predicate P, set on $A \times B$, without any exceptions can be successfully decomposed; it is important only that it is a predicate, and not something else. To perform the last condition it is sufficient that the subject reacts to any pair of signals $x \in A$ and $y \in B$ every time with t double answer (0 or 1), and that this answer is uniquely determined by the pair (X,Y).

The structure of signals described by the decomposition method described above is not opened, they are still introduced only as simple elements (points) of sets M and N. On M and N multiplicities equality predicates D_1 and D_2 ((2), (3) [4]), which are uniquely introduced (up to the notation of M and N sets elements) are determined by the predicate P. Emphasize that predicates D_1 and D_2 are introduced by considerations of an objective nature, based only on physically observed facts. Predicates values $D_1(x_1,x_2)$ and $D_2(y_1,y_2)$ can be pre-computed for any $x_1,x_2 \in M$ and $y_1,y_2 \in N$ without reference to the subjective experience of the subject.

At the same time, predicates D_1 and D_2 allow a psychological commentary (interpretation), consistent with the witness's consciousness of the subject. If as a result of the calculations it turned out that $D_1(x_1,x_2)=1$, then perceptions x_1 and x_2 should be identified by the subject; if $D_1(x_1,x_2)=0$, then the subject should discover their difference from each other. Similarly, when $D_2(y_1,y_2)=1$, then the subject should find out that y_1 and y_2 thoughts are identical; when $D_2(y_1,y_2)=0$, then they must be realized by the subjects as different. If it turns out that there is no such consistency between objective and subjective data, then such results of the mathematical description of the intellectual activity of the subject should be considered inadequate. This means that something in the investigation of the intellect was done in a wrong way, and performed work needs to be improved. If you follow this technique also in the intelligence theory (which seems natural and reasonable, and you cannot see other ways), you will have to guess the formula predicate representing and then formulate a system of its properties from which such representation admissibility would logically follow. Any formula divides the function described by it into parts, represents it in the form of some other functions superposition. This process is called function decomposition. Decomposition of any function can be performed in many different ways. But where should one stop?

During the decision of the last question it is extremely important not to be mistaken. It is natural to expect that the predicate, which characterizes very complex perception processes, understanding and awareness will have an equally complex structure, revealed in decomposition process. Almost certainly, the functions obtained as a result of the first decomposition act will have to be subjected to further decomposition. And maybe it should be performed many times. If we conduct P predicate decomposition from the very beginning in a wrong way, then very soon we will get into a deadlock. This problem that helps to solve introspective information reported to the subject about his subjective experiences. Having the opportunity to learn something about the signals inside the "black box" of his psyche, the subject can tell the researcher the correct way of P predicate decomposing. At the same time, physical response experimental definition results $t = P(X,Y)$ subject to signals X and Y, are surely not dependent on the subject's subjective experience. Witnessing the emergence of x perception in his mind of X situation and Y text meaning, the subject leads the researcher to a thought to introduce intermediate signals x and y and decompose the predicate $t = P(X,Y)$ into three functions: $x = f(X)$, $y = g(Y)$ and $t = L(x,y)$.

Let us return to the problem of P predicate decomposition. Previously it was divided into three parts – f, g and L predicate function. Now the object of consideration will be L predicate. We defined the form of this predicate for a case, when elements numbers in P and P sets is small. The method considered there is based on the "force reception" of all possible variants sorting. However, as it was mentioned above this technique does not allow us to obtain a mathematical description of the tested object under the conditions when P and P sets are immensely large, and namely this case is applied in practice. Now during decoding of L predicate type we go a different way, namely – the way of such its properties formation, from which it would be possible to extract additional information about the structure of L predicate.

When solving this problem we will proceed from the working hypothesis that predicate $L(x,y)$ corresponds to $x \in y$ ratio membership. Call this type of predicate as membership. Consider those heuristic considerations that incline us to this hypothesis. Each $y \in N$ text sense corresponds to a completely definite set S of situations perception $x \in M$, such that $L(x,y)=1$. This leads to a thought of considering the meanings of texts as situations perceptions corresponding sets names. However, it is possible to object that with the same result for each $x \in M$ situation perception to introduce T sense meanings $y \in N$, such that $L(x,y)=1$, and consider the situations perceptions as meaning sets corresponding names in the texts.

However there is one circumstance, which does not allow doing this. If perceptions could act as sets, then they could be applied to operation of union, intersecting and adornment. But is it possible, for example, to combine two any perceptions? It is not, since different perceptions mutually exclude each other. A new perception can only arise in the place of the old, giving way to it. Two or more perceptions cannot exist simultaneously. At every time point only one perception can exist. Similar considerations make us reject the possibility of intersection and complementary operations perceptions conduct.

It is completely different with the meaning of the texts. Take, for example, thought x_1 and x_2, expressing by the phrases «It is raining» и «The sun is shining». Each of them corresponds to a quite definite set of situations. Let thoughts x_1 correspond T_1 set, and x_2 thoughts – T_2 set. Is it possible to form x thought from x_1 and x_2, which would correspond to the union of sets T_1 and T_2? It is possible, it is enough to combine initial phrases with the union "or", being understood in the unified sense "or also" (there is another meaning of the union "or" – separating "or-or"). In the result we obtain phrase «It is raining, or the sun is shining ». The intersection of thoughts is expressed by the union «and», addition of thought with the particle «not», in words « false that …». It is clear, that unification operations of intersections and additions, in principle, can be applied to any thoughts.

Now let's try to formulate a system of conditions, which would characterize predicate $L(x, y)$, set on $M \times N$, as a membership predicate. In accordance with the abovementioned we formulate a non-intersectability postulate that reads: sets M and N do not intersect. Formally, this postulate can be written as follows:

$$\forall x \in M \forall y \in N D(x, y). \quad (33)$$

In the theory of sets the axiom of bulk or continuity is used: if the elemental composition of the sets coincides, then the sets coincide themselves. In psychological interpretations, the axiom of bulk means that if the meaning of the text y_1 corresponds to many perceptions of situations S_1, but the sense of the text y_2 corresponds to many perceptions of situations S_2, and these sets coincide with each other, then sense of texts as subjective states of the subject also coincide. In accordance with the above stated we formulate the postulate of bulk:

$$\forall y_1, y_2 \in N(\forall x \in M(L(x, y_1) \sim L(x, y_2) \supset D(y_1, y_2)). \quad (34)$$

Further, we will need a postulate of the existence of contradictions that assert the existence of such a thought $y \in N$ which does not correspond to any of the perceptions $x \in M$. In other words, according to the contradiction of the postulate, there must be an idea which corresponds to the empty set of situation perceptions. The text expressing such an idea is easy to form, for example, «It is raining, and it is not raining». Any statement, which does not go with any set situations M, call it contradiction. Formally, the postulate of the existence of contradictions is as follows

$$\exists y \in N \forall x \in M L(x, y). \quad (35)$$

The next condition is called the postulate of exhaustiveness. According to this postulate for any situation perception $x \in M$ should exist such sense of the test $y \in N$, which goes with this perception, but does not go with any other. In other words, for each predetermined perception there should be such a text that exhaustively describes it. The word "exhaustive" is used here in those sense, that according to the text, describing this perception, it can be distinguished from any perception, containing in M perception. According to such text the subject should be able to choose from all sorts of M set situations perceptions the only perception, corresponding to this text. The postulate of exhaustiveness is formally recorded in the form of the following expression:

$$\forall x \in M \forall y \in N(L(x, y) \wedge \forall x_1 \in M(L(x_1, y) \supset D(x, x_1))). \quad (36)$$

Finally, formulate the last condition, which we call the unity of the postulate. Let y_1 and y_2 be senses of texts, which correspond to the set of situations perceptions T_1 and T_2. Unity postulate states: for any $y_1, y_2 \in N$ it is such sense of the text $y \in N$, which corresponds to many situations $T = T_1 \cup T_2$. This means that any pair of thoughts can be affected by the operation of their disjuncture. The integrity postulate is formally written as follows:

$$\forall y_1, y_2 \in N \forall y \in N \forall x \in M$$
$$(L(x, y_1) \vee L(x, y_2) \sim L(x, y)). \quad (d)$$

Conclusions

In mathematics it goes without saying that subsets of any universe do not coincide with any of the elements of this universe. Thoughts are abstract, disbeliever, their source is not the external world, but human mind. Any person easily distinguishes perceptions from thoughts. Perceptions are characterized by objectivity, each of them represents the image of external world fragment.

In the developing method of identification subjective data is used to control the subject intelligence study results quality, which has just been characterized as purely physical. Is it possible for physical knowledge to be substantiated by the subjective evidence of introspection? Is not it more correct to approve the opposite? Sure, it is correct. Scientific results of a physical nature are therefore called objective, which do not require recognition of the truth of reinforcement by considerations of a subjective nature. Nevertheless, not everything is as simple and straightforward as it may seem at first sight.

Objectively observable behavior of the subject is studied by physical methods in the theory of intelligence. Exhaustive information about P predicate should be eventually obtained as a result of this study. Everything has been safe if it was possible to build up a dependency table $t = P(X, Y)$ from all sorts of signal values X and Y. Then the problem of human intelligence study aspect observed here could be considered completely solved. However, the set of all situations and the set of all texts that can be presented in the experiment to the subject are almost invisible. In fact, it is impossible to take all the situations and the texts in turn and for all possible pairs to experimentally determine the binary reaction of the subject. To complete all such experiments, not only the entire life of the subject will suffice but also solar system existence time is not enough.

That is why it is necessary to act differently, to go a compass. Exactly the same problem exists in physics. There are no positive results if using «power take» of all possible cases complete research. Physicists overcome this difficulty in the following way: they try to guess a formula, describing process of the study, and look for conditions (i.e. postulates, laws), from which this formula could be logically deduced. The formulated conditions are subjected to a selective pilot test. If they are performed in all experiments and namely experiments are sufficiently diverse, then, even in spite of their small number the theory is recognized as fair. Exactly according to this method Newton built and sustained celestial mechanics and since that time this method is accepted as imitation model for all serious physical researches.

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Функціональна структура прогнозування компаратора в методі ідентифікації комутації

Абед Еріїч Аднан

Теорія інтелекту вивчає зв'язок суб'єктивного і об'єктивного світів, які сприймаються і аналізуються інтелектом людини. Тому, з одного боку, теорія інтелекту як наука повинна відповідати об'єктивним вимогам, прийнятим в фізичних науках, з іншого боку - вимушена спиратися на інтроспективні дані інтелекту. Як і інші точні науки, теорія інтелекту потребує спеціальної математичної мови, яка б відповідала об'єкту теорії інтелекту; особливих методів, придатних для об'єктивного вивчення інтелекту людини. Основним методом об'єктивного аналізу і моделювання роботи інтелекту людини є метод компараторної ідентифікації. У методі людина, що досліджується, своєю поведінкою реалізує деякий кінцевий предикат. Відповідно до методу проводиться експериментальне вивчення властивостей цього предиката, потім за результатами будується математична модель реакцій людини, суб'єктивних станів її інтелекту. Метод компараторної ідентифікації дозволяє з точністю до ізоморфізму знайти функцію, що перетворює фізичні ситуації в суб'єктивні образи, які породжуються ними. У розроблюваному методі ідентифікації суб'єктивні дані використовуються для контролю якості предметних результатів дослідження інтелекту, що тільки що характеризувалися як суто фізичні. Чи можливо обгрунтування фізичних знань суб'єктивними свідченнями самоаналізу? Чи правильніше не схвалити зворотнє? Звичайно, це правильно. Тому наукові результати фізичної природи називаються об'єктивними, що не вимагають визнання істинності підкріплення міркуваннями суб'єктивного характеру. Проте, не все є настільки простим і зрозумілим, як це може здатися з першого погляду. **У статті** виконано декомпозицію предиката компаратора і проаналізовано його функціональну структуру, вивчено процес факторизації множин суб'єктивних станів інтелекту людини.

Ключові слова: теорія інтелекту; алгебра кінцевих предикатів; порівняльна ідентифікація.

Функциональная структура прогнозирования компаратора в методе идентификации коммутации

Абед Эриич Аднан

Теория интеллекта изучает связь субъективного и объективного миров, воспринимаемых и анализируемых интеллектом человека. Поэтому, с одной стороны, теория интеллекта, как наука, должна соответствовать объективным требованиям, принятым в физических науках, с другой стороны – вынуждена опираться на интроспективные данные интеллекта. Как и другие точные науки, теория интеллекта нуждается в специальном математическом языке, соответствующем объекту теории интеллекта; особых методах, пригодных для объективного изучения интеллекта человека. Основным методом объективного анализа и моделирования работы интеллекта человека является метод компараторной идентификации. В методе испытуемый своим поведением реализует некоторый конечный предикат. В соответствии с методом проводится экспериментальное изучение свойств этого предиката, затем по результатам строится математическая модель реакций испытуемого, субъективных состояний его интеллекта. Метод компараторной идентификации позволяет с точностью до изоморфизма найти функцию, преобразующую физические ситуации в порождаемые ими субъективные образы. **В настоящей статье** выполнена декомпозиция предиката компаратора и проанализирована его функциональная структура, изучен процесс факторизации множеств субъективных состояний интеллекта человека.

Ключевые слова: теория интеллекта; алгебра конечных предикатов; сравнительная идентификация.