

Imposing and Superposing the Information Processes over Variable Concepts.

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ABSTRACT

A conceptual basis for modeling the information process is given in the study of the features of its propagation in case of varying the determining property. The system of conceptual dependencies over variable abstract sets is used as a relativized basis for processing semantic information. Variable domains and mapping are used to control the progress of the process, as well as recognition mappings and reversal mapping of the process property. It is shown that in the representing functorial category they can be interpreted as cognitive architectures that are significant for solving semantic modeling problems. In this case, the superposition of process states can be taken into account.

INTRODUCTION

Cognitive interference refers to the loss of the information process, which occurs when ideas/processes generated by other participants interfere with the activity of generating their own ideas belonging to a given individual. It is usually assumed that knowledge is representable by language structures, and reasoning is a computational process that rearranges these structures in accordance with formal rules. Similar representations dominate cognitive science when computational notions are applied to understand human cognition.

Modern computational notions are based on drawing ideas from category theory. S. MacLane gives convincing examples that illustrate the main thesis: logic is a branch of mathematics, and not vice versa [9]. His reasoning relies on functors. In turn, F. Lawvere proposes a functorial construction variable set [8]. Computational models based on systems related to the lambda calculus have been studied by D. Scott [11], especially the ability of parameterization. Similar ideas were developed by G. Cousineau, P.-L. Curien and M. Mauny and brought it to implementation of a computational agent in the form of a categorical abstract machine [1] and the CAML programming language based on it.

METHODS

In this work, the method indexical expressions [7] is used, which allows the semantic model to take into account the stages of knowledge and their unfolding. The resulting information graphs [6], by analogy with [15], can be interpreted as an environment for the propagation of data streams, which in this sense can control their interference. On their basis, the cognitive information management toolkit [2] can be developed. In addition, in this work, the ideas of modeling information processes by variable domains [13] are largely inherited. The features of process inheritance proposed in [3] are taken into account. The model solutions used are also based on the idea of channelized propagation of [5] processes. Finally, the possibilities of jump transitions of the processes [4], as well as the effects of confusion of information processes [14], potentially causing cognitive interference and its propagation along the network channels, are taken into account.

ENTER FINDING #2

Agile Smit Problem Let us give a generalized example of conditions when an information process with a variable property arises. A similar example was discussed earlier in structures such as the Semantic Nets. The construction of a mathematical model is known as the 'Problem of quick (agile) Smith' [12] and illustrated by the situation marriage of g Smith s, changing r his name to Jones j, and it is known that A already had Jones j, who was already married g.

DISCUSSION

All this testifies to a certain proportion of incompleteness of the semantic modeling of information processes, and the available proposals are fragmented. At the same time, the key point is the development of a computational model that really represents the interaction of information processes. To overcome the difficulties and contradictions that arise, we will use the conceptual framework of variable domains, which allows us to develop a rather productive parameterization.

In main Section we construe a generalized example of a process dependency architecture where an information process exhibits a variable property. As shown, the emerging presentation complexities are fundamental.

ENTER FINDING #1

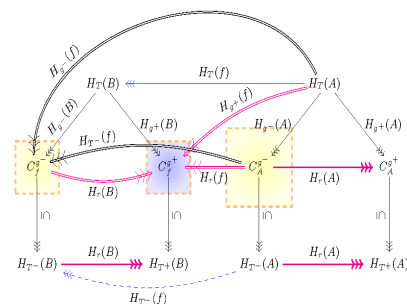


Fig. 1. Variable conceptual dependencies over the variable domains.

ENTER FINDING #3

Problem of Schrödinger's cat It turns out that the model presented below also characterizes the type of quasi-entanglement, similar to the Schrödinger's cat model. E. Schrödinger's proposed an imaginable experiment that explains the quantum superposition [10]. The essence of the experiment is as follows: in a box with a conventional cat there is an atom of a radioactive element and a ask with acid, which will break after the radioactive element decays. If the ask breaks, the cat will die, but we do not know for sure whether the atom of the radioactive element will decay, and no one, including the cat, can influence this. Consequently, the cat is both alive and dead at the same time, which is called quantum superposition.

The prevailing theory, called the Copenhagen Interpretation, states that a quantum system remains in superposition until it interacts with or is discovered by the outside world. According to this interpretation, the cat remains both alive and dead until the condition is measured by an external observer. We will be able to determine the exact state of the cat only after we open the box and, thus, the state of the Schrödinger's cat in the quantum world is determined precisely by the fact of our observation, a kind of cognitive interference.

CONCLUSIONS

1. A new semantic model for the propagation of information processes based on variable domains is presented. Variable concepts are generated that can be used to model cognitive interference (the propagation of an intervention process).
2. The method of indexical expressions allows to operate with the state/property uncertainty.
3. A computational frame is proposed, written in the form of a system of conceptual dependencies, which establishes a connection between variable domains and variable concepts.
4. The computational frame is implemented as a functor model.

ACKNOWLEDGMENTS & REFERENCES

This research is supported in part by the Russian Foundation for Basic Research, RFBR grants 20-07-00149-a, 19-07-00326-a, 19-07-00420-a, 18-07-01082-a.