

Modeling Spread, Interlace and Interchange of Information Processes with Variable Domains.

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ABSTRACT

In this paper, a semantic model is developed and designed to study the occurrence, spread and safe interaction of semantic processes in information modeling systems, including cognitive interference. An approach to construct a semantic network is proposed and based on a computational model in which both nodes and arcs are information processes. Concepts are represented by intensional objects within the framework of theories without types, and they, in turn, are considered as special counterparts of typed theories. Similar mixing was used in model studies for lambda calculus. To a contrast with them, in this paper, information processes correspond to parameterized metadata objects, which are variable domain constructs. Transformations of variable domains correspond to the spread of the process. Directional transformation provides the generation of metadata targets in the form of parameterized concepts. This simulates the development of the process, which corresponds to the spread of cognitive interference and allows the interpretation of a hidden time factor. The emerging model is purely process based and provides such a conceptual framework. The possibility of coding this framework with a system of interdependent lambda terms is reflected.

INTRODUCTION

Semantic modeling is an integral part of the field of Semiotic Linguistics, in which human language is understood as a *folk model of the world*. A *folk model of the world* means that each language is a special conditional form of representing the world, imposed on all members of the linguistic community by the social need to have a common communication tool. The folk model of the world is a kind of collective philosophy unique to each language. It is called the folk model, because in many essential respects it differs from the scientific model of the world [25], [24], [23]. We will look for the transition to building a scientific model of the world using the functors [11], [1]. Relationship with the applicative model can be established using the approach in [19].

In the present work, the compositional approach to semantic modeling of the spread of information processes is sequentially applied, which has a number of features. Aspects of the applicative model of computation arise in accordance with the recommendations of [3]. The Section 2 presents an analysis of well-known forms and methods of conceptual modeling and their systematization. As shown, in this framework, process spread modeling is not equipped with the required semantic means. The Section 3 presents a new semantic model for the spread of information processes based on variable domains. In this case, the generation of variable concepts occurs, using which we can simulate *cognitive interference – the spread of the process-intervention*.

METHODS

In this paper, we use the indexed expression method [18], which allows us to take into account the stages of knowledge and their development in the semantic model. The resulting information graphs [17] are similar to [28], and can be interpreted as an environment for the spread of data streams, which in this sense can control their interference. Based on them, a tool for cognitive information management can be developed [13].

In addition, the ideas of modeling information processes by variable domains [26] are largely inherited in this work. The features of process inheritance proposed in [14] are taken into account. The model solutions used are also based on the idea of the channeled spread of processes [16]. Finally, the possibilities of jump transitions of processes [15], as well as the effects of entanglement of information processes [27], which potentially cause cognitive interference and its propagation along network channels, are taken into account.

ENTER FINDING #1

Directional transformation provides the generation of metadata targets in the form of parameterized concepts. This simulates the development of the process, which allows the interpretation of the hidden time factor.

The emerging model is purely process-driven and provides a conceptual framework.

The possibility of coding this framework with a system of interdependent lambda terms is shown.

5) A thematic example based on functors is constructed, and a thematic semantic model is functorial. This opens up one of the possible directions for future research, corresponding to the D. Scott's research program [22].

ENTER FINDING #2

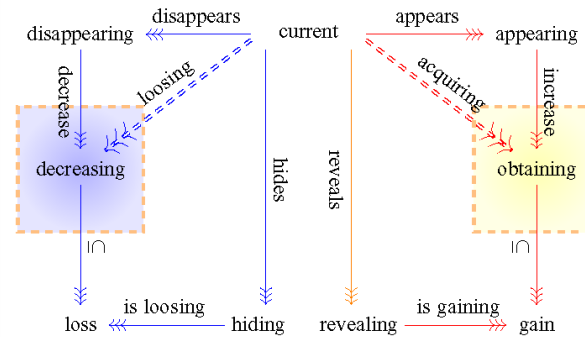


Fig. 5. Information process "change".

ENTER FINDING #3

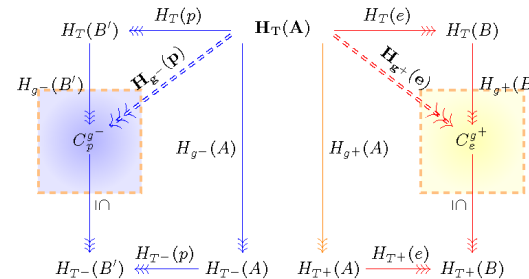


Fig. 6. Variable Domains representing the interference of processes.

DISCUSSION

In the present work, the compositional approach to semantic modeling of the spread of information processes is sequentially applied, which has a number of features. Aspects of the applicative model of computation arise in accordance with the recommendations of [3]. The Section 2 presents an analysis of well-known forms and methods of conceptual modeling and their systematization. As shown, in this framework, process spread modeling is not equipped with the required semantic means. The Section 3 presents a new semantic model for the spread of information processes based on variable domains. In this case, the generation of variable concepts occurs, using which we can simulate *cognitive interference – the spread of the process-intervention*.

CONCLUSIONS

A new semantic model for the spread of information processes based on variable domains is presented. In this case, the generation of variable concepts occurs, using which we can simulate cognitive interference – the spread of the process-intervention.

- 1) An approach to the construction of a computational model in which information processes are presented in the framework of theories without types, and they, in turn, are considered as special parts of typed theories.
- 2) The mixture of type-free and model theories that was previously used in model research for lambda calculus is used. In contrast to them, in this paper, information processes correspond to parameterized metadata objects, which are variable domain constructs.
- 3) Transformations of variable domains correspond to the spread of the process.

ACKNOWLEDGMENTS & REFERENCES

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