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Human Thinking and Artificial Intelligence

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Abstract: Artificial Intelligence (AI) work has drawn on the tools and technology of many fields such as formal logic, decision theory, probability theory, management science, decision theory, linguistic and philosophical science. Nonetheless, many enhancements and extensions have been required for the implementation of these disciplines in AI. The methods of computational logic are among the most efficient method in the field of artificial intelligence. Included in an agent loop, modern logic incorporates and strengthens conventional logic as well as the classical principle of judgment. Many of the techniques, not only in AI but in everyday life can be used to help people to improve their own human intelligence without computer assistance. The present paper deals mainly with the regulatory features of the ALP model agent and ways in which it can help us improve our own thought and behavior. This paper particularly focuses on how it can both help us communicate better with others and make better choices in lives.

Keywords: Information, Language, Logic, Technology

1. INTRODUCTION:

Computer logic comes in many forms like other logics. The present paper focuses on the computational logic of the abductive logic programming (ALP). A common paradigm of both analytical and ethical reasoning is the ALP agent model, which embeds ALP within the agent process. As analytical model it is consistent with the classic decision theory and includes production systems as a special case and as normative model it includes classical logic[1], [2]. These normative and descriptive features of the ALP agent model make it an intuitive and deliberative process theory combining. Dual cycle theories come in many forms as with most theories. In one way, though, intuitive thinking proposes easily intuited solutions to judgmental questions, while conscious thought monitors and tracks the consistency of these ideas that can be endorsed, modified or overridden[3], [4]. The main concern in this paper is about the regulatory characteristics of the Model ALP agent and how it can help us improve our own human thinking and conduct. In particular, this paper focuses on how people can communicate with other individuals more effectively and take better decisions in our own lives. This provides analytical guidance both for the English written style guidelines and for the enhanced policy advice[5], [6]. This paper is based on the technical basis of the ALP agent model and references to the work involved.The ALP model agent can be seen as a variant of the BDI model where agents use their beliefs to fulfill their wishes through selected actions plans. The ALP agents are both values and expectations (or objectives) in the clausal form of logic[7], [8]. Crowns are represented by logic programming clauses and targets, with full power of first-order logic (FOL) as common clauses. In this paper, the goals are first written because they are always used to justify things, just as production rules do. Beliefs are typically first written because they are generally used to think for, like logical programs[9], [10]. Yet convictions are sometimes first written words as they can be used in ALP to reverse or forward logic. If conditionals of any form are written forward or backwards is not essential in semantics.

1. Introduction of ALP Agents

The ALP agent model can be seen as a version of the BDI model in which agents use their values by creating goals, which are selected action plans, to fulfill their desires. Within the clausal form of logic, agents of ALP all values and expectations (or goals) are interpreted as conditionals. Beliefs are interpreted as logic programming clauses, and priorities are represented as more general clauses, with full first order logic (FOL) expressive power.In this paper, targets are first written requirements, since they are often used to reasoning forwards like development rules. Beliefs are usually first written inference, since they are typically used to think backwards, like logic programs. Yet values are often written conditions first, and in ALP they can be used to argue backwards or forwards. In semantics, it doesn't matter whether some sort of conditionals are written forward or backward.

2. Operational and Model Theoretical Semantics

Informally speaking, values describe the world as it sees the agent in the language of ALP agents and expectations define the future as the agent wants to be. Information inclusion in deductive systems and priorities are data base enquiries and integrity limits. More formally, the task of an agent with beliefs B, goals G and observations O is to generate a series of actions and assumptions on the world in the model-theoretical semantics of the ALP Agent's model:

G U O is true in minimal model distinguished by B U Δ

B always has a special minimal layout in the simple case where B is a set of Horn clauses. The example of the Horn clause may be generalized to other instances, but these strategies are not applicable here. ALP agents explain assumptions and convictions in deciding whether such instances of the objective's conditions are valid and in making the respective example of the target's conclusion relevant as a target. Suggestion from experience implies that development processes are bound forward, but it has the logic of trying to achieve the goal by keeping the inference valid when its expectations come true. Conditional goals so recognized are also known as maintenance targets. Reasoning backwards, searching for an action plan whose implementation meets the goals are the solution to success targets. Returning logic is a way of reducing the aim and carrying out steps are a special case of atomic objectives. The above-mentioned aims and principles, establish by forward looking that a disaster occurs and fulfilling the purpose. Such three methods provide an initial space for searching. Aiming at meeting the target by thinking backward and that the target aids to warn the train driver to sequential sub-goals and click the alarm button. If it is an atomic operation, this last sub-goal may be carried out explicitly. If the action works, then the success goal and the preservation objective in this situation are known. The agent must not only generate actions, but also assumptions about the world in model-theoretical semantics. These hypotheses explain the use of ALP abduction. Abduction is the development of theories to clarify findings O.

3. Selecting the Best Solution

Alternatively, there may be several that make G and O both true with B. These may have different values and the task for an intelligent agent is to find the best available computer resources. The value of an action is measured in classical decision theory by the expected usefulness of its effects. The importance of an argument is likewise calculated in the philosophy of science, in terms of probability and explanatory power. The behavior of both candidates and opponents can be evaluated using the same methods of ALP officers. The candidate hypotheses are tested in both cases by arguing for the implications of the decisions in the first place. The quest technique for thinking backwards, using some form of best-first search, as an A* or a branch-and-bound, integrates the function in ALP agents to find the best one. The issue of conflict resolution in production systems in general is related to this mission.

Conventional methods of development deter complex decision theories and abductive inference largely through the collection of higher-level priorities, beliefs and judgments into lower-level heuristic interactions of stimuli responses. In ALP agents, lower expectations and better consideration and decision-making may be mixed in order to get the best of both worlds, as is the case in dual mechanism theories. Unlike BDI agents, ALP agents interlink perception and practice with thought, and do not have to create complete strategies before they start acting. While most BDI agents select a single plan at a time and commit to it, ALP agents only select and commit individual activities. ALP agents will interlude the development of different alternate plans in order to enhance success prospects, unlike most BDI agents. The ALP model for artificial agents can be used, but it can also be used as descriptive model for human reason and decision-making. In the remainder of this paper, though, it can also be used as a paradigm that blends conventional logic with classical decision theory and that strengthens it. The reasons for basing the principle of better decisions on the ALP agent model are based on the claim that ALP's clausal logic is a logical LOT construct.

4. Logic of Clausal as LOT Agent

In language philosophy, the relationship between language and thought is the three main schools of thought as explained below:

- The LOT is a privately owned and linguistic representation which is independent of the public and natural languages.
- LOT is a social and natural language who speaks affects our way of thinking.
- The structure of human thought is not language-like.

The ALP model is a first-school agent which is compatible with the third school and opposes the second. The second is rejected by the ALP logical thinking model partly because the nature of natural languages does not allow the presence of AI principles and partly because obviously the language is too complex and inconsistent for it to be a good model of human thinking. But the third school is funded because it has a connectionist framework that masks its linguistic character. In AI, the idea that some form of logic is the LOT of an agent is strongly linked to GOFAI (good old-fashioned AI), which was partially obscured by connectionist and Bayesian approaches in recent years. The ALP thinking process is able to resolve the tension between logic, Bayesian approaches and connectionism. This is because ALP's clausal logic is much easier than standard FOL, because its compatibility is adaptable to Bayesian probability, and has a close connection to Standard FOL as LOT does to natural language. The first phase of this argument is based on philosophy of value, which assumes that people understand the natural language, trying to collect the most information at the lowest cost of retrieval. Therefore the closer a communication becomes to its intent, the more the reader (or listener) can derive this meaning from the communication. The more the principle becomes corollary to that.

5. LOT and the Natural Language

Contrary to the problems of understanding communications, the problem of understanding ordinary, daily natural language communications is much more difficult. There are two sides to this more difficult problem. Firstly, the object of the communication is to define the context. For example, the enigmatic English expression "He gave her the novel" must be interpreted, called "He" and "Her," by John and Mary. The second part consists of canonical interpretation of the intended meaning, so that identical messages are interpreted in the same manner. The following English words, for example, both say the same: John gave the book to Mary. John had given Mary the book. John's book was received by Mary. John gave the book to Mary. The use in a visual image of a canonical form makes the interpretation simpler to think later on. In such cases it could be possible to represent the common meaning of the

different sentences in the logical form (John, mary, book), or more precisely: act, object, recipient. A way to distinguish between similar events and similar books is the more precise form. It follows from the tenets of the related philosophy that people should communicate their messages in a manner which is similar to their mental images if they want them to be simple to understand. It should be simple, so that it is easy to extract its meaning and be effective, and so that its interpretation is similar to that canonical form. For instance, don't say, "Every bird in the class of birds has tail feathers." Yet say: Every bird's got tail feather. All the birds belong to the aves of language. Or if a bird belongs to class aves, a bird has feathers. How people say, depends on. Written English means that there are or are no commas before and after the relative clause starting with the words "which" can indicate different meanings. The differences between conclusions and conditions are represented in clausal logic. Examples such as these reveal that the relationship and difference between conclusions and conditions are a fundamental feature of the LOT and provide additional support to the idea of a plausible nominee for the LOT as a conditional type of clausal logic.

6. Clausal Logic and Standard FOL

For the representation of information in AI and the competing clausal logic as a LOT candidate, many types of logic were used. But in contrast to regular FOL, clausal logic is not only so powerful due to its basic conditional structure. The lack of explicit existential quantifiers is compensated by the use of skolemization in giving names. In another respect, if used together with the minimum model semantics, it is also more powerful than FOL. In clausal logic, the reasoning is also significantly simpler than in standard FOL and can be reduced for the most part to just backward and forward reasoning. The argument in clausal logic also includes default reasoning with negation as a failure together with the minimum model semantics. The relationship between the standard FOL and the clausal form is doubtless similar to that between the natural language and the LOT. The inferences can be separated into two forms in both cases, carried out over two steps. In FOL the first kind of inference law can be seen as transforming sentences into clausal form (both skolemization as well as the replacement of not (A or B). The second type (including the P (t) inference from XP(X)) can be considered as a clausal reasoning and is incorporated into forward and backward reasoning. There are many ways to express the same knowledge in the natural language. In natural language LOT could be called a simplified and canonical type of unambiguous sentences; clausal logic is a simpler canonical version of FOL. The claim to consider clausal logic as a formalization of the LOT is provided by this comparison. Clausal logic has indeed proved to be a practical language for the representation of knowledge, independent of any language which an agent might use to communicate with other agents. For human agents, clausal logic can help people to communicate more effectively, also in a way closer to the LOT, by expressing their communications. Logic from Clausal can allow people to communicate more coherently by connecting new data with old information. This consistency model takes advantage of the fact that clausal logic is a connectional representation that preserves knowledge in a relation graph of expectations and beliefs.

7. A Connecting Form of the Logic of Clause

Similar to the way in which clausal logic implements FOL, the linking graph proof method implements clausal logic through the first conversion of sentences into canonical form, pre-calculating connections between words and hypotheses, and naming links to their coherent alternatives. Afterwards, either forward or backwards, these connections are allowed when necessary. Links frequently enabled can be compiled into shortcuts, which more directly achieve the same effects in the form of stimulus response associations and heuristic rules. While clausal logic is a symbolic representation, the names of the predicate symbol no longer matter when the links and their unifying substitutes have been computed. All further concerns

may be limited to enabling the links and generating new rules, the connections of which are inherited by the parent clauses. In many cases, if all their links have been enabled, parent provisions may be deleted or overwritten. Any link can be picked at any time for activation. But it makes sense to use new observations, including communications observations, to trigger links most of the time only when new clauses are applied to the graph. Activation of links can be guided by the assignment of different points of view and goals, which reflect their relative value (or usefulness). Different weights can also be assigned to different links, reflecting statistical information on the frequency in which the activation has helped in the past. The strength of goals and observations in proportion to the weight of the links can be propagated across the graph. Similar to the activation network is the subsequent proof protocol that activates the connections with the currently highest-weighted power. In addition, an ALP style of forward and backward reasoning is automatically applied in combination with a form of first search. The relation graphical thought model can offer the misleading impression that thinking has no linguistic or logical character whatsoever. But there is nothing else than the conventional computer science difference between the thought of connection graphs and the reasoning in clausal logic between a optimized low-level implementation close to the hardware and a high-level representation close to the problem area. The connective graphics model of the mind further supports the argument that thinking takes place in an independent LOT. LOT can help natural language development, but does not rely on the existence of it. The relationship graph model also shows that communicating thoughts in natural language is close to decompiling low-level programs into higher system. The recompilation of programs is difficult in programming. This can help explain why our emotions are often difficult to put into words.

2. CONCLUSION

Decision analyzes include collaborative strategies to make better choices by relying more on the goals that inspire alternative solutions. The ALP model provides a simple framework that can help to formalize these strategies through the integration of them into an integral human thinking model. In particular, it shows that it can also be used in the search for alternatives in the same criteria of expected utility used in traditional decision-making theory. In addition, it demonstrates how heuristics and even stimulus responses in the spirit of dual process models can be integrated with logical thinking and decision theory. Two ways are discussed in which normal people can use the ALP agent model to enhance their own human intelligence, drawing on many specific advances in Artificial Intelligence. They can be more clearly and consistently able to express their ideas and can be used to make better choices. The use of these techniques is a fruitful direction for future research and an area that promises to be collaborative between AI researchers and more humanistic disciplines researchers.

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