Knowledge Representation

About knowledge representation

- knowledge is implicit, i.e. hidden inside our minds - problem- how to share it with others? - we need to make it explicit. i.e. formalized and, thus, available to everybody - explicit form of knowledge enables us to share the information less ambiguously which became extremely important when computers started to be used for knowledge transfer and sharing - knowledge representation is an interdisciplinary field based on mathematics, philosophy and cognitive science.

Knowledge representation definition

Principles of knowledge representation

In their article "what is Knowledge Representation?" [1], authors R. Davis, H. Shrobe, and P. Szolovits argue that the concept of knowledge representation can best be understood in terms of five distinct roles it plays:

1. A knowledge representation (KR) is most fundamentally a surrogate, a substitute for the thing itself, used to enable an entity to determine consequences by thinking rather than acting, i.e., by reasoning about the world rather than taking action in it.
2. It is a set of ontological commitments, i.e., an answer to the question: In what terms should I think about the world?
3. It is a fragmentary theory of intelligent reasoning, expressed in terms of three components: (i) the representation's fundamental conception of intelligent reasoning; (ii) the set of inferences the representation sanctions; and (iii) the set of inferences it recommends.
4. It is a medium for pragmatically efficient computation, i.e., the computational environment in which thinking is accomplished. One contribution to this pragmatic efficiency is supplied by the guidance a representation provides for organizing information so as to facilitate making the recommended inferences.
5. It is a medium of human expression, i.e., a language in which we say things about the world.

Knowledge representation technologies

- Logic-based representation
- Procedural representation
- Network representation
- Structural representation

Bibliography

1. R. Davis, H. Shrobe, and P. Szolovits. What is a Knowledge Representation? AI Magazine,

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