KNOWLEDGE REPRESENTATION SCHEMA FOR MULTI DOMAIN EXPERT SYSTEMS

Maya S. Rainford
The Open University, Sri Lanka.

A Production System (PS) approach to knowledge representation is one which commences with a set of innate, declarative rules representing embedded predicates and proceeds to construct, using innate learning mechanisms, a PS which represents, at any time, its total available information used for decision making. It does so by using data structures with intrinsic control information derived from raw data contained in a working memory combined with formal reasoning mechanisms to create new Rules to reflect probabilistic deductions ie.inferences.

This paper describes an extension to the Production Rule which provides for the transformation of inferential knowledge to assertive knowledge. A conceptual schema is described, where such cluster to form 'blackboards'- specific sub-domains of acquired probabilistic deductions. The normal limitation of frames which are constrained to represent inferences, is, however, overcome by allowing for the positive or negative enhancement of each blackboard, such positioning within the entire knowledge base representing the progression of degrees of certainty.

A methodology for constructing a multi-domain expert system is presented based on the above architecture.