ABSTRACT

This work is concerned with extending of the knowledge-based systems methodology to the legal realm in order to interpret and analyze a fact situation. Most knowledge-based systems in this domain employ production rules to represent the domain knowledge and to describe the strategies adopted by the legal practitioners. Use of only the production rules show that there are limitations like the exhaustive use of all the rules and hence almost the complete domain knowledge regardless of the context or purpose, the non hierarchical nature of the rule base and the restriction to expert's shallow heuristics. These limitations not only reduce the efficiency of the system but also downgrade its responsiveness.

Various methods can be used to circumvent these limitations. In this work a knowledge representation technique that employs **modified production rules** which are production rules modified so as to include the source references from where the chunk of the knowledge represented by it has been gleaned from, and frame like structures called **FORMS** in unison has been proposed. Use of modified production rules has satisfied the well established practice, in the legal realm, of providing the 'citations' while arguing or delivering judgments. Also, the use of FORMS has

eliminated the need of meta-rules which are used in the management of the explicit groupings of the production rules and has improved the systems knowledge organization for FOCUSED reasoning. With the use of the FORMS and object-oriented programming the limitations of the production rules have been overcome retaining their advantageous traits such as modularity, extensibility and domain independence. This knowledge representation technique has been used to develop a system called TIDA that aids in interpreting and analyzing fact situations arising out of industrial disputes, particularly pertaining to the payment of the retrenchment and lay-off compensations. The system has a module called SIFTER that elicits facts from a textual form of input data, and employs multiple agendas in its control mechanism.