

A Hyper-Semantic Approach to Intelligent Information Systems

Walter D. Potter, John A. Miller, and Krzysztof J. Kochut
Department of Computer Science
and
Artificial Intelligence Program
University of Georgia
Athens, Georgia 30602

ABSTRACT

Our view of an Intelligent Information System (IIS) is composed of a unified knowledge base, data base, and model base. The model base includes decision support models such as simulation models and forecasting models, for example. However, we feel that the model base should include domain specific problem solving modules as well as decision support models. This, then, allows an IIS to provide responses to user queries regardless of whether the query process involves a data retrieval, an inference, a computational method, a problem solving module (employing, for example, a non-production rule based heuristic search technique), or some combination of these. The unified integration of these components is the major focus of this paper. The inclusion of problem solving modules within our unified approach is of primary importance, and a major contribution of this work.

The foundation for our unified knowledge/data/model/module management approach is Active KDL (Active Knowledge/Data Language) which follows the functional and object-oriented paradigms. Active KDL is based on the hyper-semantic data model, KDM (Knowledge/Data Model) developed in the mid-1980's. By hyper-semantic, we mean a data (information) model capable of capturing *even more* of the meaning of an application area than captured via traditional, semantic, and object-oriented models.

FULL TEXT

Integrated Computer-Aided Engineering (ICAE), Special Issue on Intelligent Information Systems, Vol. 1, No. 4 (1994) pp. 341-357.