

ABSTRACT

A Unified Theory of Intelligent Databases

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In this thesis we examine the problem of developing a unified theory of (traditional and non-traditional) databases. This theory is necessary because we have discovered that as the use of database technology spreads into more real-life applications, existing DBMS technology has not been able to model the needs of these applications.

We first survey the several database systems, and show that they may be categorized according to their (static) structures and/or inference mechanisms. We define formally the unified theory by using the notions of higher order structures, choice sequences, and logic. Thereafter, we provide detailed techniques, based on choice sequences, for extracting individual database theories from our unified theory.