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Expanding the Definition of "Database"

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Preface

The First International Conference on Information and Knowledge Management was held in Baltimore November 8–11, 1992. Over 200 participants from twenty-one countries attended. A major theme of the conference was the degree to which the fields of database, artificial intelligence, and information retrieval overlap and enrich each other.

For this volume, the editors solicited expanded and updated versions of some of the best papers presented at CIKM'92. The scope of the term "database" has broadened considerably over the last several years, to include types of data, and means of organizing that data, that were unknown even ten years ago. Each paper included in this volume illustrates this point.

- In his paper "Discovering Context in a Conceptual Schema", Semmel shows how the knowledge embedded in the conceptual schema of a database can be used to generate queries. In his QUICK system, the conceptual schema is mined for contextual information which is then used to help the user formulate complicated SQL queries. The extraction of conceptual information can also expose subtle flaws in the database design.
- In their paper "An Interactive Image Management System for Face Information Retrieval", Bach, Paul, and Jain describe their *Xenomania* system. They base their design on a general architecture for visual information management systems that provides for the query and retrieval features of ordinary databases, and image understanding techniques. *Xenomania* also uses domain knowledge about human faces, and relevance feedback, to assist and guide users during the search process.
- In their paper "Queries in Object–Oriented Database Systems", Alhajj and Arkun present an algebra and query language for object-oriented databases. Operations in the algebra and query language are characterized in terms a set of objects and a set of message expressions understood by those objects. The algebra satisfies the closure property, which means that the results of operations are objects in the algebra in their own right. This approach therefore allows for the creation of new objects, as well as the manipulation of existing objects in the algebra.
- In their paper "Consistency Checking in Object Oriented Databases: a Behavioral Approach", Martin, Adiba, and Defude show how database consistency and integrity constraints can be associated with the operations defined in an object-oriented database system. Their system provides for the definition of local constraints, which are applied to operations within a transaction, and global constraints, which apply to the transaction as a whole.
- In their paper "Integrity Constraints Representation in Object–Oriented Databases", Formica and Missikoff present TQL, a data definition language for object–oriented databases. TQL provides for the specification of integrity constraints within the database schema, where they can be checked statically

(when the database is first created) or at runtime. The syntax and semantics of TQL are described in detail.

- In their paper "A Framework for Temporal Object Databases", Pissinou and Makki describe T-3DIS, an object database model with extensions to support temporal data, including the semantics of time and the temporal evolution of data. T-3DIS allows for the definition, description, and classification of temporal data objects, and provides a set of operations for manipulating these temporal objects.
- In their paper "Inductive Dependencies and Approximate Databases", Keen and Rajasekar describe a way of generating approximate results to a query for which the information needed for an exact result is missing. The approximations are generated by inductive dependencies, which have a heuristic character that makes them more flexible, if less precise, than functional dependencies. Guard conditions may be associated with an inductive dependency, giving the designer more control over how the approximations are generated.
- In their paper "Object–Oriented Database Design Methodologies: A Survey", Song and Park present a comprehensive overview of tools and techniques for the design of object–oriented database schemata.

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Baltimore, Maryland
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