

Associative Information Science TIE and GIA

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Abstract

In this age of the computer, data overload is upon us! Just knowing what data we have is impossible, let alone being able to find anything. Current database technology is old, limited, does not optimally utilize available hardware capabilities, and because of its complexity and limitations, is very difficult to use.

The solution to all these problems will be presented as a new Technology for Information Engineering¹ (TIE) enabling Guided Information Access (GIA).

TIE is a major change of focus in the way we store and view data.

Relational Databases focus on storing data. For quick and efficient access, each data record in a table is forced into the same strict data structure. This makes changes and data merges difficult and searches uninteresting. To make some things easier, all sorts of tables are created - essentially patching the problems rather than solving them.

Implementations of TIE are designed to store associations. Data storage is left as an aside, because it is not material to any important functionality, in particular that of data access and searching. Associations contain information. Focussing on associations focusses on data information content and simultaneously solves most, if not all of the current database problems.

This new technology is the start of a new *associative information science* which treats data in any form, structured or not, as a store of associations between data units, simply called *items*, and data content description units called *selectors*.

Stored associations are referred to as *metadata* and are the only thing needed for all searches. Special optimized data structures, independent of the nature of the data, are used for the metadata, allowing fast responses to queries and enabling associative responses, which immediately show the associations in the data and guide a user to only the available associations, something that is not practical with any other present system.

The algebra needed for understanding deeper details of this system is a Boolean algebra of very large, mostly sparse, binary vectors. The beginnings of this algebra will be presented. Some general relationships amongst useful parameters will be presented. Measures of associative information will also be introduced.

A demonstration of several different practical database implementations will be given.

¹ Jerzy Lewak, 2002, "Technology For Information Engineering (TIE): A New Way of Storing, Retrieving and Analyzing Information" URL: <http://arxiv.org/abs/cs.DB/0204038>