

REPRESENTING LARGE BODY OF DATA RELATIONSHIPS

ABSTRACT

Representing a large amount of association patterns in the form of data events in a
5 computer system is accomplished by use of a unified framework based on attributed
hypergraph (AHG). Data relationships are stored as attributed hypergraphs in a computer
or computer network, ready for querying and further analysis. This invention is simple
yet general enough to directly encode association patterns of different orders discovered
10 from large databases or raw data relations with arbitrary properties. Both qualitative
relations (if A and B are related) and quantitative relations (A and B are related $k\%$ of the
time) are represented as attributed hyperedges. Such representation is lucid and
transparent for visualization. It supports ad hoc and complex associative queries while
requiring no physical pre-design or restructure. Thus, a computer storage and retrieving
15 system (e.g., a database) can be readily implemented to store and manipulate huge
amounts of relations in accordance with an AHG representation. This is particularly
important and useful for statistical patterns from machine and/or human generated data
source, including but not limited to social media, manufacturing, and scientific research.

FIG. 1