

**Concept modeling: From origins to multimedia**

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**Abstract** The origins of concept modeling are in the field of artificial intelligence. This is where the initial algorithms were introduced first. With the emerging developments in the field of multimedia systems, a strong need is generated to examine and implement concepts-based retrieval of multimedia-contents, from large data bases or from the Internet. The early works were based on appropriate modifications of classical approaches. The latest developments utilize the algorithms that make sense only in the case of multimedia systems. This paper presents a number of classical approaches to concept modeling and their applicability to multimedia. Then it discusses a number of approaches introduced specifically for multimedia. Finally it presents an approach which was fully implemented and tested in an academic environment for industry needs.

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**Keywords** Concepts · Knowledge · Ontology · Semantics · Multimedia · Retrieval · Understanding · Data · Relations · Representation

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**1 Introduction**

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There is an exponential increase in general data and multimedia contents day to day. Consequently, the ability of an average computer-educated person to find a specific data

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