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Mathematical knowledge ontologies and recommender systems for collections of documents in physics and mathematics

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Abstract

© 2016, Pleiades Publishing, Ltd. An approach to the implementation of a recommender system based on ontologies of mathematical knowledge is presented. On the basis of a document browsed by a user, the system forms on line a list of recommendations, which include similar documents, key words, and definitions of these words from ontology and other terminological sources. The method of recommendations yields a vector representation of documents, taking into account the position of terms in the logical structure of the document and their ontological connections. On the basis of the cosine measure, a measure of proximity between documents is calculated. The order of documents in the list of recommendations is determined by values of the proximity measure. Various adaptations of the system to user scenarios aimed at the preparation of personalized recommendations are discussed.

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