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MINING POTENTIAL INFORMATION OF MASSIVE ASTRONOMICAL DATA BY THE METHODS OF KNOWLEDGE MANAGEMENT

Abstract

To deal with the flood of astronomical data, the knowledge management system provides a platform for science discovery and a toolkit for astronomical research. The large database is built to federate data archives with the information infrastructure for astronomy, and to merge different kinds of data, such as multi-wavelength data, so as to make use of potential and valuable astronomical information. To make the scientific utilization of the data sets more effective, data mining and processing is used to achieve knowledge management for various applications, such as intelligent searching, cloud computing, knowledge reasoning, trend analysis and advanced visualization. The outlier detection approaches in large datasets could be used for knowledge discovery tasks in astronomy, such as discovering rare types of astronomical objects or phenomena, and detecting space debris which may pose a threat to satellites. The applications of astronomical data processing could be used to cope with similar challenges encountered in other data intensive fields.