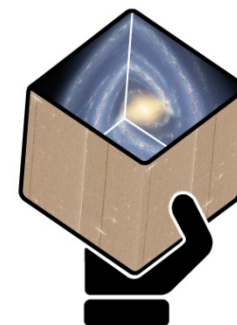


GENIUS

Report for WP4



gaia



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Overview

To fully exploit a billion object data set, containing a wide variety of data (astrometric, photometric, spectrophotometric, spectroscopic, ...) more advanced and powerful data exploration tools will be needed. This work package is devoted to the development of such tools, in close coordination with WP200 to ensure that they are tailored to the actual needs of the scientific user community.

4.2 Visualization

This Work Package addresses the development of visualization tools and solutions, adapted to the large size and complexity of the Gaia archive. This includes interaction with the data, resulting in seamless visual queries to the archive.

Ref. Andre's presentation

4.3 Data mining

The application of the data mining algorithms in order to extract new knowledge from the data is mandatory for a full scientific exploitation of the Gaia data. The main focus will be on Knowledge Discovery which is expected to reveal patterns and relationships within the astronomical data that can lead to the detection of new types of objects or isolated, exotic objects that represent rapid stages of stellar evolution and/or new astrophysical scenarios. Also, modelling tasks will arise from the discovered patterns. In that sense, the capability of automated dimensionality reduction (feature extraction, feature selection) and the development of key learning algorithms (clustering, outlier analysis, swarm intelligence, . . .) implemented for parallel processing are foreseen as important.

Ref. Francesc's presentation

4.4 VO tools

Besides novel modes of access to the entire Gaia archive and the emerging needs on visualisation (WP420) and data mining (WP430) it is anticipated that the more traditional archive access mode # in which a potentially complex query downloads a data set of modest size for interactive client-side processing # will continue to be important. The most efficient way to support this model is to provide a seamless interface for Gaia data acquisition from existing analysis tools in which astronomers already have expertise. We therefore intend to extend the following existing VO applications with Gaia-specific data acquisition tools

Ref. Mark & Enrique's presentation