

The ALADIN Survey Integrator

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Abstract. ALADIN is a powerful tool for data interpretation, which allows one to integrate survey images and catalogues with reference information from SIMBAD, NED, VizieR, and with images from observatory archives.

Recent evolution of the ALADIN software and of the image database are presented. The main facts are the following:

- The AladinJava standalone version has been distributed, allowing one to use local catalogues and images as input with the full functionalities of ALADIN;
- AladinJava is now able to decompress images in the hcompress format. Decompression for multi-resolution compressed images is also currently included in collaboration with the CEA;
- The image database now includes the whole DSS2 set (Red and Blue) in addition to the previously implemented DSS1 and MAMA images;
- The server is now fully rewritten in order to allow access to a larger heterogeneity of survey images. 2MASS and then DENIS images will soon be implemented in the system.

1. Introduction

The current decade (1995–2005) is marked by several instrumental and observational trends in astronomy. First of all the outset of the 8–10m class telescopes led, beside the scientific results, to the building of huge archives of on-line data. Secondly space missions went on providing data avalanche in more various wavelengths. And last but not least, the sky survey domain is rapidly growing and evolving. Together with the completion of the digitization of all the old-generation sky Schmidt surveys and the appearance of non-optical surveys we are now facing the large optical digital surveys.

This led to the emergence of the new Virtual Observatory concept, widely discussed during two dedicated conferences, held in Pasadena (Virtual Observatories of the Future) and Garching (Mining the Sky) during year 2000. The goal assigned to VO(s) is to make the data easily and rapidly accessible to the whole astronomical community, and to provide dedicated public tools to make usage of these data easier. Presently different partners, such as Observatory archives, survey teams, and data centers have to provide building blocks of a distributed VO.

CDS faced this need by making Aladin (Bonnarel et al. 2000; Fernique & Bonnarel 2000) evolve from a cross-identification facility towards a distributed data integrator, dealing with images, catalogues, survey data, observation logs, and compilation databases.

2. Aladin: From New Cross-identification and Observation Preparation Tools ...

The AladinJava applet is basically a help to test and modify the automatic cross-identification strategies, by allowing overlays of Vizier, SIMBAD and NED sources directly on reference images. From the beginning, the Aladin database gave access to DSS1 images (1.7 arcsec sampling) from the STScI CD-ROM set and to other high sampling (0.67 arcsec/pixel) SERC and ESO Schmidt survey scans, made in Paris at CAI with the MAMA facility (Guibert 1992).

In March 2000 the AladinJava standalone version was released. It allows the same kind of overlays for user catalogues in Tab Separated Value or XML/Astrores format and for user images with WCS FITS headers. Coordinate grids, and Field of Views of various telescopes (currently: CFH12K, XMM, and HST) together with 1.5 deg “low resolution” views have been added in both applet and standalone version in December 2000. The Java applet is now used as reference image facility in NED and at CFHT—discussion are under way with other groups, such as Isaac Newton Group.

In the meantime the spatial resolution and spectral coverage of the whole sky has been improved by the inclusion of the red and blue colors of the DSS2 (Lasker & STSCI Sky-Survey Team 1998) in the Aladin database. The I color of DSS2 will be included in 2001. The total amount of available Schmidt survey data is now larger than a terabyte.

3. ... to Observatory Archive and Survey Data Integration

AladinJava now goes further by providing within the same portable interface beside links to the full content of SIMBAD, Vizier, and NED databases access to ground or space observatory archives—currently IUE spectra or HST and VLA FIRST archive images. The latter are directly usable in the interface, and AladinJava allows to shift from archive image data to reference images and conversely. Access to these archive images is made faster by the integration of a Java HDECOMP module in the interface, which allows to read and decompress images transferred in the much more compact hcompress format. More efficient multi-resolution methods such as MR1/mr-comp are currently included, in collaboration with CEA (Murtagh et al. 1998). The December 2000 release goes further by allowing usage of any on-line image database in FITS WCS, or catalogue server in TSV or XML, through a short ASCII description (in GLU syntax; Fernique et al. 1998). This functionality has been tested with the SUPERCOSMOS Web server.

In addition, inclusion of survey catalogues in Vizier integrates them within Aladin. Currently USNOA, DENIS, and 2MASS catalogues are available. APM and GSCII will be soon. In the meantime a prototype of a new version of the server has been developed which allows management of near-IR and optical CCD

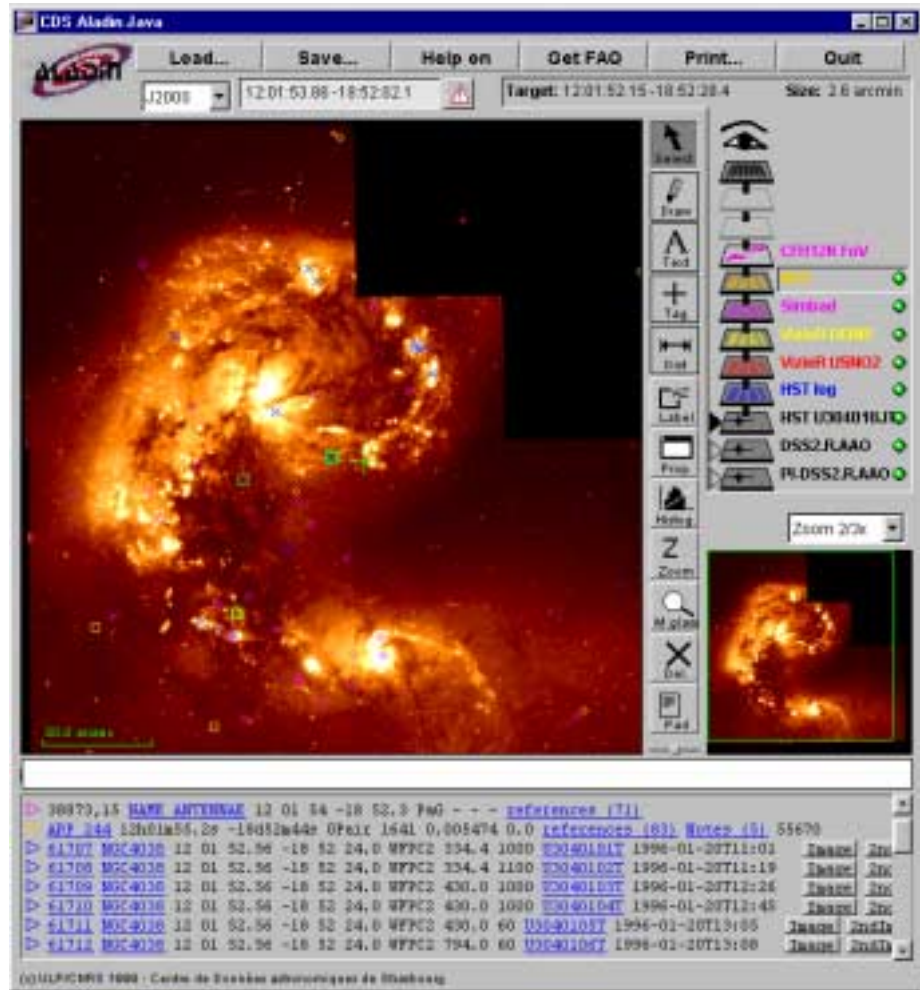


Figure 1. HST image of the Antennae, with overlays from SIMBAD and NED. DSS1 images are on the stack.

survey pixels. With this new server Aladin will be able to deliver DENIS and 2MASS images—this is planned for the first semester of 2001. CFH12K fields reduced at the Paris TERAPIX data center (Radovich et al. 2000) will come later, and may be followed by the MEGACAM survey data.

All these new features make Aladin a real prototype of an Observatory archive and survey data integration tool (Figure 1).

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