Gloria In A Nutshell

GLORIA stands for “GLObal Robotic-Telescopes Intelligent Array” and will be the first free and open access network of robotic telescopes in the world. It will provide a Web 2.0 environment where users can do research in astronomy by observing with robotic telescopes, and/or by analyzing data that other users have acquired with GLORIA, or from other free access databases, such as the European Virtual Observatory.

Benefits of the Network

Users with no telescopes will have access to a large number of robotic instruments in the network with a dedicated web applications. During the three years of the project, at least 17 telescopes will be integrated into the network, with 12 of them currently operational.

Telescope owners will be able to use software tools provided by GLORA to robotize their telescopes, to do observations and analyze the data. They will also be invited to join the network, dedicating some of their observation time for other users and gaining wider access to network resources.

All standards, software and documentation developed by GLORIA will be offered to the community under free licence to use, distribute and modify.

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GAMMA-RAY BURST ALERTS

An important aspect of GLORA’s operation will be the capability to respond autonomously to alerts regarding new astrophysical events such as supernovae and gamma-ray bursts.

A standard alert programmable interface will be designed for GLORA’s scheduler to allow the network to respond to these events. The message carrying the observational request is sent to one or more participating robotic telescopes to optimise the follow up observations by the network.

OPEN ACCESS

GLORA project will define free standards, protocols and methodologies to allow citizen and professional scientists to incorporate their telescopes and all related instrumentation (cameras, filter wheels, domes etc.) into the network.

ONLINE EXPERIMENTS

GLORA provides the mechanism for users to access and control the telescopes remotely and make observations. Web authoring tools will enable users to create their own online experiments.

Two types of experiments will be available: Interactive, with users getting direct remote control of the telescope functions, Batch, when users send requests for target observations via the web interface and the network performs them automatically.

Batch mode of operation results in much more effective usage of network resources. Dedicated Observation Time Scheduler will be developed to prepare optimal observation schedules for all telescopes in the network. This is a highly non-trivial task for a network of heterogeneous telescopes.

OFFLINE EXPERIMENTS

GLORIA’s archival and other public data-bases are used to carry out astronomical research by professional, amateur and citizen scientists. GLORIA also offers a web environment for analysing meta-data similar to the European Virtual Observatory and Galaxy Zoo.

Message to the future

About 500 photos from users all over the world collected in an Venus-Transit outreach action.

Outreach & Education

GLORIA is providing live webcasts of astronomical events and educational resources to engage students’ and public interest in astronomy.

Types of Offline Experiments

Classification of variable stars
Evolution of variable stars with time
Optical transient searches
Occultations of stars by solar system objects

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for more information visit http://gloria-project.eu

Background photo: PI of the Sky robotics telescope at IRTA-CEDEX in El Arenques (Peralba), Spain
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Offline demonstrator experiment with LUIZA

GLORIA research-level offline demonstrator experiment is based on the selected data from the PI of the Sky telescope in Chile. Thanks to the wide field of view of the telescope the image sample allows for variability analysis of bright variable objects of different kind. Analysis is done using the LUIZA framework designed for efficient analysis of astronomical data.

Within LUIZA, data analysis is divided into small, well defined steps, which are implemented as so-called processors. The main advantage of this solution is its flexibility. The idea is to develop a large number of processors in GLORIA, doing many different tasks, so user is always able to find a set which matches his/her needs. He is then able to define the whole analysis chain at run time and LUIZA secures consistent data flow between processors.

Image analysis in the proposed demonstrator experiment is done in two steps: image preprocessing, which includes object finding and astrometry, and object light curve reconstruction. Preprocessing is done only once, while setting up the experiment (or whenever new data are added), and the object light curve reconstruction is run in response to each user request submitted via the web interface.