2015 ASTRONOMICAL DATA ANALYSIS SYSTEMS

AND SOFTWARE CONFERENCE

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Rydges World Square, Pitt Street, Sydney, NSW, Australia

FOCUS DEMO ABSTRACT BOOKLET

Focus 1: **Bruno Merin**
European Space Astronomy Centre

ESA's Astronomy Multi-Mission Interface

ESA is working on a science-driven discovery portal for all its astronomy missions at ESAC with the provisional name Multi-Mission Interface. The first public release of this service will be demonstrated, featuring interfaces for sky exploration and for single and multiple targets. It requires no operational knowledge of any of the missions involved. From a technical point of view, the system offers all-sky projections of full mission datasets using a new-generation HEALPix projection called HiPS; detailed geometrical footprints to connect all-sky mosaics to individual observations; and direct access to the underlying mission-specific science archives.

A first public release is scheduled before the end of 2015 and will give users worldwide simplified access to high-level science-ready data products from all ESA Astronomy missions plus a number of ESA-produced source catalogues. A focus demo will accompany the presentation."

Focus 2: **Ken Ebisawa**
Japan Aerospace Exploration Agency (JAXA)

Web-applications to explore the Earth and Universe at JAXA's space science data archive DARTS

DARTS (Data Archives and Transmission Systems; http://darts.isas.jaxa.jp) is JAXA's space science data archive. In this Focus Demo, we are going to demonstrate DARTS's web-applications including "C3" (http://darts.isas.jaxa.jp/C3/) and "JUDO2" (http://darts.isas.jaxa.jp/astro/judo2/), with which users can freely explore the terrestrial data and astronomical data, respectively, archived at DARTS using only ordinary browser and mouse. To display the terrestrial data, C3 uses the same technology

as "Dagik Earth" for Web-browser (http://www.dagik.org/dow/index-english.html); the global maps are made with the orthographic projection, which produces realistic visual feeling if projected on a semi-sphere.

Focus 4: **Thomas Robitaille**
Max Planck Institute for Astronomy

Interactive data exploration with Glue

Modern research projects incorporate data from several sources, and new insights are increasingly driven by the ability to interpret data in the context of other data. Glue (http://www.glueviz.org) is a graphical environment built on top of the standard Python science stack to visualize relationships within and between data sets. With Glue, users can load and visualize multiple related data sets simultaneously. Users specify the logical connections that exist between data, and Glue transparently uses this information as needed to enable visualization across files. In this demo, I will take participants through the steps of setting up Glue, loading data, setting up links between datasets, explore the data using various kinds of visualizations, and show some of the more advanced features of Glue.

Focus 5: **Petr Skoda**
Astronomical Institute of the Czech Academy of Sciences

The Distributed Cloud Based Engine for Knowledge Discovery in Massive Archives of Astronomical Spectra
P. Skoda^1, J. Koza^2, A. Palivcka^2, L. Lopatovsk'y^2 and T. Peterka^2
^1_Astronomical Institute of the Czech Academy of Sciences, Ondrejov; ^2_Faculty of Informatics, Czech Technical University, Prague;

The current archives of large-scale spectroscopic surveys, such as SDSS or LAMOST, contain millions of spectra. As some interesting objects (e.g. emission line stars or quasars) can be identified only by checking shapes of certain spectral lines, machine learning techniques have to be applied, complemented by flexible visualization of results. We present the VO-CLOUD, the distributed cloud-based engine, providing the user with the comfortable web-based environment for conducting machine learning experiments with different algorithms running on multiple nodes. It allows visual backtracking of the individual input spectra in different stages of preprocessing, which is important for checking the nature of outliers or precision of classification. The engine consists of a single master server, representing the user portal, and several workers, running various types of machine learning tasks. The master holds the database of users and their experiments, predefined configuration parameters for individual machine learning models and a repository for a data to be preprocessed. The workers have different capabilities based on installed libraries and HW configuration of their host (e.g. Number of CPU cores or GPU card type) and may be dynamically

added to provide new machine learning methods. In the Focus Demo we will show the typical user interaction with the engine from the setup of a user account up to the visualisation of machine learning results. The spectra used for experiments will be obtained by several ways, including local files upload, ftp and http download and, namely, using Virtual Observatory SSAP, DataLink and SAMP protocols with advanced post-processing involved.
