Applications Session 2
IVOA Interop 2021b
Thursday Nov 04 06:30 UTC
# of participants: 45

Brent Miszalski
Modernising Target List Visualisation and Classification
We have developed a web application that allows users to visualise and classify targets in a large list. Large surveys often need to check targets for problems or to assign an observing priority. Users can navigate their targets after uploading a csv. Each target is shown in a small panel, allowing the classification to be made via radio buttons or keyboard shortcuts. Either a static image or Aladin Lite can be used to display target images. The latter allows catalogues to be loaded and displayed. The design builds on Data Central's Data Aggregation Service, enabling fast simultaneous retrieval of catalogue data via asynchronous Python and websocket messaging.

Motivation for target list visualisation
People use scripting to generate lists or use tools
IVOA tools allow for better approaches
Aggregation service is async permits the tasks to run in parallel
reporpose Data Aggregasion service for target visualisation purposes

take CSV and ingest it in Mango DB, classify targets and export results
There are a variety of controls to manipulate and clasify the initial CSV target list

Currently is single user mode but it can be updated to work with a group of users
Classification can be updated for each target or group of targets

A help dialog is available

App is already used by Hector team.
Might be released later as a more general service

Input catalogue can be extended to come from a different source such as TAP query

Question:
    What is stored in Mango?
    At the moment is just the list of targets.
BM: Yes, the list of targets (names, ra and dec) + user classifications (username, classification and timestamp from when the classification was made). It's conceivable that you could display e.g. a histogram of user classifications from all users (if desired). Multiple users can use it at the same time (through our CAS server authentication system, same as for the Data Aggregation Service) and their results are stored. The current interface only shows **your** classification.

Cyril Obrecht,
L. Michel
Advanced TAP Client
We will present an advanced Web TAP client able to easily select and browse joined data such as CAOM-based resources, Simbad or the relational registry.

Work started 2 years ago with students
TAP schemas can have complex relationships
This results in complex queries
This type of queries are not easy to write
Results in VOTable come in denormalized mode
Tool removes the complexities by analyzing the schema, presenting the user with a corresponding graph and returning the results in the normalized format
Results have links to the tables

Cyril is presenting a demo
Display the CAOM data.
Use graphical interface to formulate the query
Navigate to the preview artifact in CAOM
Search bar add constraints to the otherwise complex query

Feature that are available
Service finder returns the service tree. Aladin light is connected to the resulting TAP query result.

Q&A
Tom: How are the fields in the search bar translated into query constraints?
By using the schema of the service. There is no additional metadata. The notion of keys is very important.

Prototype is available for others to play with.
Aladin V11 beta version
TAP complex can be tested at
https://saada.unistra.fr/tapcomplex/demo/html/jsResource.html or
https://saada.unistra.fr/tapcomplex/demo/html/searchBar.html

Jean-Michel Glorian
CASSIS Aladin plugin
This presentation/demo will show work between the CASSIS Team and the Aladin Team to use Aladinand CASSIS to visualize and extract spectra from hyperspectral data cube, and interact between the 2 tools.

Collaboration work between CASSIS team and Aladin team
Tools for hyperspectral radio cube to extract spectra and to identify lines
Rework an old plugin "QuickVis" developed in 2013

Aladin: Purpose is to discover and display cubes using SIA2 and ObsTab.
CASSIS display spectra, apply spectrral tools and do line identification etc.
A plugin have been developed to coordinate the communication betwen Aladin and CASSIS

Demo:
Find a MUSE cube in the ESO type service
Demonstrate all the functionality of the tool: cursor move, spectra extraction, line identification, etc.
Demo movie is available as a movie in the Application program page

Retrieve the cube with a cutout on the spectral dimension
Install CASSIS and select the tool to run the first spectral display. Perform a series of operations

Future work: work with multiple cubes, improvet the disply, manage the spectral range selection between CASSIS and Aladin, additional user confirmation for units used

Q&A
Have you evaluate using SAMP instead of the plugin architecture?
Yes, Cursor movement is slow. There are too many events to make this doable.
Work only took a few months and the results are great

BM: Cool demo Jean-Michel! Merci! Is it possible to fit all lines in the cube (over a given wavelength range) to generate e.g. RV or emission line maps?
=> Answer via DM - yes, it should be possible. Brent to investigate further.

Adrian Garcia Riber
Astronomical Data Sonification
Towards the development of a proposal for an Auditory Virtual Observatory based on Deep Learning, work includes prototypes based on autoencoders and Lomb-scargle periodogram analysis for the automatic exploration of lightcurves, and stellar spectra that make use of Kepler Objects of Interest lightcuves and Miles and Stelib stellar libraries.

This is work in progress. Doing PhD in music and technology
Automatic auditory exploration of astronomical databases
Promote astronomy in musc
pipeline to convert FITS files in to audio files. Python computing block and outputs png image representing the data. Synthesizer reads and plays the png image. This represents a basic approach

Next step
Convert data into notes and scores
Python + music21
periodograms to score
This presentation is a call for help with interpretation of these results.

Another approach using the periodograms
Synthesized flute is shown

Deep learning approach with the focus on spectra. Convert the spectra to 10 values. Training set using 985 stellar spectra.
2 alternatives:
1- Autoencoder to notes
2 - Autoencoder to spacialized chords

Q&A
Deep learning has been applied to spectra and sonification was applied to results
Maybe try to apply sonification directly to spectra and deep learning to the result

Link to the demo: https://vimeo.com/user82659899