Python Clients for CASDA's TAP, SODA and SIAP services

CSIRO Information Management & Technology

James Dempsey | CASDA Project Engineer

10 May 2016

Outline

1. Survey Team Requirements
2. Demo of Cutout Script
3. Overview of other scripts

Survey Science Teams

- Aim: Surveys of the southern sky

- Many fields
    - EMU: 1200
    - DINGO: 966
    - GASKAP: 481 (644 scheduling blocks)

- Repeatable processes

Example Use Cases – CASDA Only

- Produce 1D profiles of rotation measure at a location
- Easily assemble a set of images taken over some time interval for a particular region of sky.
- From these I want to know how many sources were variable and plot the light curves for the variable sources

Example Use Cases – Cross archives

- Compare soft x-ray counts with radio intensities, to help assess the degree of instrumental polarisation

- See optical, radio and IR images of a galaxy side-by-side and derive a radio spectral index and radio luminosity

- Plot spectra from various facilities (MWA, ATCA, ASKAP) to identify sources with peaked spectra

- EMU survey will include automated cross-identification with major surveys at other wavelengths (e.g. optical and infrared)

CSIRO

Radio Images are Sparse

Image Size - pixels	7,800
Image Size - bytes	1,016
Image planes	1,200 (300 freq x 4 pol)
Sources per Image	4,000
Planes per source	~16

CSIRO

Demo of TAP, SODA Cutout Script

- python cutouts.py james.dempsey@csiro.au 609 demo

1. TAP/Obscore - Find images in the scheduling block (obs_id)
2. Datalink – link for each image, authenticates to get image access
3. TAP – Query catalogue for bright sources in image
4. SODA – Run cutout job
5. SODA – Download cutout images

CSIRO

Other scripts

- siap.py
  - SIAP2+SODA
  - Retrieve all images at a particular sky position

- sources.py
  - TAP+Obscore+SODA
  - Retrieve cutouts for listed sources from an image

- See http://www.atnf.csiro.au/observers/data/casdaguide.html

CSIRO

Thank you

CSIRO IM&T
James Dempsey
CASDA Project Engineer

t +61 2 6214 2912
e james.dempsey@csiro.au
w www.csiro.au

CSIRO