Hello!
Data Visualization and Statistics in the VO Environment

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ABSOLUT CHAOS.
Virtual Observatories
The Many Faces of VO

- Develop Standards
- Develop Tools
- Develop Applications
- Develop Archives
- Motivate New Science
VO-India Software Projects

VOPlot  Visualizer for catalogue data
VOCat  User Interface and Query Tool
C# FITS Library  Utility Package
VOStat  Statistical Package
VODesktop, VOMosaic

All tools are PLASTIC and SAMp compatible:
PLPlatform for ASTtronomical Tool InterConnection
Simple Application Messaging Protocol
Tools

VOPlot, VOStat
6283 catalogues
### MEAN STANDARD DEVIATION

<table>
<thead>
<tr>
<th>Column Names</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>_RAJ2000</td>
<td>154.4083</td>
<td>108.2551</td>
</tr>
<tr>
<td>_DEJ2000</td>
<td>0.4345911</td>
<td>0.2630965</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>0.44478</td>
<td>V</td>
</tr>
<tr>
<td>z(em)</td>
<td>0.2475942</td>
<td>z(em)</td>
</tr>
</tbody>
</table>
KOLMOGOROV SMIRNOV ONE SAMPLE TEST

Columnwise Transformations:
- Select Column: RAJ2000
- Coefficient: 0.01 (Confidence Coefficient)

Expression (CDF) should be in terms of 'x' only (e.g., '1-exp(x)')
- CDF: x
- Upper Limit: Inf
- Lower Limit: 0
- Distribution: Gaussian
  - Argument 1: 1
  - Argument 2: 1

Plot Format:
- PostScript
- JPEG
- PDF
- PNG

Submit

For Distributions Refer table:

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Argument 1</th>
<th>Argument 2</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaussian</td>
<td>( \mu ): mean</td>
<td>( \sigma ): standard deviation (+ve)</td>
<td>[ f(x) = \frac{1}{\sqrt{2\pi\sigma}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} \quad -\infty &lt; x &lt; \infty; \quad \sigma &gt; 0 ]</td>
</tr>
<tr>
<td>Cauchy</td>
<td>( t ): location</td>
<td>( s ): scale (+ve)</td>
<td>[ f(x) = \frac{1}{\pi s \left(1 + (x-t)^2 / s^2\right)} \quad -\infty &lt; t &lt; \infty; \quad s &gt; 0 ]</td>
</tr>
</tbody>
</table>
One-sample Kolmogorov-Smirnov test

data:  x

\[ D = 1, p-value < 2.2e-16 \]

alternative hypothesis: two.sided

Dmax:

\[ D \]

1

Table value:

0.09913864

As \( D > \) table value 'Test is significant'
K-MEANS PARTITIONING

Click here to view Plot

sizes:
33 30 73 42 46 42

centers:

<table>
<thead>
<tr>
<th>Xpos</th>
<th>Ypos</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1186.9091</td>
<td>1846.9091</td>
</tr>
<tr>
<td>2 514.2000</td>
<td>1866.8000</td>
</tr>
<tr>
<td>3 1578.8219</td>
<td>730.3562</td>
</tr>
<tr>
<td>4 568.3333</td>
<td>565.4286</td>
</tr>
<tr>
<td>5 1760.1304</td>
<td>1554.7174</td>
</tr>
<tr>
<td>6 542.5000</td>
<td>1301.9048</td>
</tr>
</tbody>
</table>

withinss:
2292505 1764038 10275335 35:
K-MEANS PARTITIONING

Click here to view Plot

sizes:

1 1 2 1 2

centers:

\[
\begin{align*}
X_{\text{RAJ2000}} & \quad X_{\text{DEJ2000}} & \quad v & \quad z_{\text{em}} \\
1 & 331.51125 & 0.49167731 & 22.000 & 4.3990 \\
2 & 47.46354 & 0.04260093 & 20.390 & 4.3730 \\
3 & 12.84379 & 0.47298542 & 20.850 & 4.2015 \\
4 & 15.90571 & 0.50249398 & 20.100 & 4.0730 \\
5 & 159.40569 & 0.85446528 & 20.575 & 4.3865
\end{align*}
\]

withinss:

0.000000 0.000000 1.359220

clusters:

1 2 3 4 5 6 7
3 3 4 2 5 5 1
Image Cutout System

Swarp (Emmanuel Bertin)
Mosaic Application

Note:
1. The status shown for a job in the Jobs Table might not match the job status as inferred from the tasks table. The status changes in this order QUEUED -> RUNNING -> COMPLETED / FAILED.
2. Our system will automatically delete the jobs older than 30 days.
3. Anonymous jobs submitted by an individual can be viewed by any user. If you want to keep your job private, please submit a job after login into the system.

List of submitted jobs

RequestID | Status       | Time                              | Label                      |
-----------|--------------|-----------------------------------|----------------------------|
130        | RUNNING      | Tue Sep 22 15:21:27 GMT+05:30 2009| red_infra_m51_form         |
129        | COMPLETED    | Tue Sep 22 15:11:23 GMT+05:30 2009| UV_infra_m51_form          |
128        | COMPLETED    | Tue Sep 22 15:11:15 GMT+05:30 2009| green_infra_m51_form       |
127        | COMPLETED    | Tue Sep 22 15:11:02 GMT+05:30 2009| near_infra_m51_form        |

Get the task information for the jobs submitted anonymously

Enter job id  Fetch
Note:
1. The status shown for a job in the Jobs Table might not match the job status as inferred from the tasks table. The status changes in this order QUEUED -> RUNNING -> COMPLETED / FAILED
2. Our system will automatically delete the jobs older than 30 days.
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</thead>
<tbody>
<tr>
<td>130</td>
<td>RUNNING</td>
<td>Tue Sep 22 15:21:27 GMT+05:30 2009</td>
<td>red_infra_m51_form</td>
</tr>
<tr>
<td>129</td>
<td>COMPLETED</td>
<td>Tue Sep 22 15:11:23 GMT+05:30 2009</td>
<td>UV_infra_m51_form</td>
</tr>
<tr>
<td>128</td>
<td>COMPLETED</td>
<td>Tue Sep 22 15:11:15 GMT+05:30 2009</td>
<td>green_infra_m51_form</td>
</tr>
<tr>
<td>127</td>
<td>COMPLETED</td>
<td>Tue Sep 22 15:11:02 GMT+05:30 2009</td>
<td>near_infra_m51_form</td>
</tr>
</tbody>
</table>

Get the task information for the jobs submitted anonymously

Enter job id  Fetch
Mosaic Application

Input Form  Sky Map  Job Output

OBJECT: M51  Resolve

RA (J2000): 202.48220  degrees
DEC (J2000): 47.23150  degrees
WIDTH (RA): 0.2  degree
WIDTH (DEC): 0.2  degree
SCALE (arc-sec/pixel): 0.39612

Cutout Services:
- SDSS Ultraviolet(u)
- SDSS Green(g)
- SDSS Red(r)
- SDSS Near Infrared(i)
- SDSS Infrared(z)

Label: infra_m51

Submit

Enter the List
Note: RA, dec can only be in degrees. HMS format is not allowed

Format: objName, ra, dec, width (RA), width (DEC)
Example: M51, 202.4682063, 47.1946667, 0.4, 0.4

File Upload
Note: You can either type a file URL (can be http, https or ftp) in below textbox or alternatively you can browse to some local file by 'select' button.

Cutout Services:
- SDSS Ultraviolet(u)
- SDSS Green(g)
- SDSS Red(r)
- SDSS Near Infrared(i)
- SDSS Infrared(z)

SCALE (arc-sec/pixel): 0.39612

Label:

Submit

Note:
HMS/DMS format of RA/Dec is supported in following three ways
1. Colon separated value. For example RA=19:17:32, DEC=11:58:02
2. Spaces separated value. For example RA=19 17 32, DEC=11 58 02
3. HMS/DMS string. For example RA=19h17m32s, DEC=11d58m02s

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### Jobld#127 - Tasks information

**Note:** To download the output fits file or image, right-click on the output link and click save as option.

<table>
<thead>
<tr>
<th>Task</th>
<th>State</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set#0</td>
<td></td>
<td><img src="image1" alt="OBJET_NAME: M51" /> <img src="image2" alt="RA: 202.48220 degree" /> <img src="image3" alt="DEC: 47.23150 degree" /> <img src="image4" alt="WIDTH_RA: 0.2 degree" /> <img src="image5" alt="WIDTH_DEC: 0.2 degree" /> <img src="image6" alt="SCALE: 0.39612 arc-sec/pixel" /></td>
<td><img src="image7" alt="Cutout Fits Files" /> <img src="image8" alt="Cutout png images" /> <img src="image9" alt="1" /> <img src="image10" alt="2" /> <img src="image11" alt="3" /> <img src="image12" alt="4" /> <img src="image13" alt="5" /> <img src="image14" alt="6" /> Load All Images</td>
</tr>
<tr>
<td></td>
<td>COMPLETED</td>
<td><img src="image15" alt="MOSAIC" /> <img src="image16" alt="Completed" /></td>
<td><img src="image17" alt="Swarp output" /> <img src="image18" alt="fits" /> <img src="image19" alt="png" /> <img src="image20" alt="log" /> <img src="image21" alt="Sextractor output" /> <img src="image22" alt="fits" /> <img src="image23" alt="png" /> <img src="image24" alt="catalog" /></td>
</tr>
</tbody>
</table>
PyMorph Pipeline

Mode

Psf selection | Normal | Repeat | Find and Fit

SExtractor

GALFIT

Plots & Results

Photometry,
Morphological Parameters,
CAS Parameters
Giant Metrewave Radio Telescope

Array of 30 parabolic reflectors, each of 45m diametre
Baseline ~25km
50-1500 MHz

GMRT, Narayangangaon
TIFR
Create New Cycle

Cycle Id: 16

Submission Date
Start: 7/22/2008

Review Date
Start: 
End: 

Negotiation Date
Start: 
End: 

Chairperson: Vivekananda Moosani

Secretary
Scheduler
Scheduling Method
Attachments Dir: D:\Dump

Assign TAC Members
TAC Members

Other Users
An 8 hour observation produces a Long Term Accumulation format file of size 1.5-2.5 GB

A 150 day cycle produces ~1 TB of data
Data Storage and Access

LTA Data
GMRT-NAS
POSTGRES-SQL

Data Staging Platform
NCRA

GUI

Metadata Database
NCRA
POSTGRS-SQL
### GMRT Archive Interface

Scan Parameters: RA: 13 29 52.37 DEC: 47 11 40.80 Radius: 60

Showing page 1 of 1. Total records: 9

<table>
<thead>
<tr>
<th>Observation No</th>
<th>RA 2000</th>
<th>DEC 2000</th>
<th>Time on src</th>
<th>Frequency1 (MHz)</th>
<th>Frequency2 (MHz)</th>
<th>Channel Width</th>
<th>Observation Date</th>
<th>Google N Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>506</td>
<td>202.47503420698308</td>
<td>47.19212716219636</td>
<td>4528</td>
<td>1390.0</td>
<td>1390.0</td>
<td>125.0</td>
<td>08-Apr-2002</td>
<td>Sky Map</td>
</tr>
<tr>
<td>506</td>
<td>202.47503420688306</td>
<td>47.19212716218636</td>
<td>2129</td>
<td>1390.0</td>
<td>1380.0</td>
<td>125.0</td>
<td>08-Apr-2002</td>
<td>Sky Map</td>
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<tr>
<td>1899</td>
<td>202.43040079474235</td>
<td>47.1929065987906</td>
<td>7176</td>
<td>614.0</td>
<td>244.0</td>
<td>125.0</td>
<td>20-Feb-2005</td>
<td>Sky Map</td>
</tr>
<tr>
<td>1899</td>
<td>202.43040079474235</td>
<td>47.1929065987906</td>
<td>7208</td>
<td>614.0</td>
<td>244.0</td>
<td>125.0</td>
<td>20-Feb-2005</td>
<td>Sky Map</td>
</tr>
<tr>
<td>1926</td>
<td>202.43040079474235</td>
<td>47.1929065987906</td>
<td>8147</td>
<td>325.0</td>
<td>325.0</td>
<td>125.0</td>
<td>03-Mar-2005</td>
<td>Sky Map</td>
</tr>
<tr>
<td>1926</td>
<td>202.43040079474235</td>
<td>47.1929065987906</td>
<td>8183</td>
<td>325.0</td>
<td>325.0</td>
<td>125.0</td>
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<td>Sky Map</td>
</tr>
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<td>2874</td>
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<td>50541</td>
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<td>42374</td>
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<td>325.0</td>
<td>125.0</td>
<td>26-Nov-2006</td>
<td>Sky Map</td>
</tr>
</tbody>
</table>

<< first  < prev 1 next > last >> All ▼

Load All To Sky Map
Thank You!