TOPCAT/STILTS Integration

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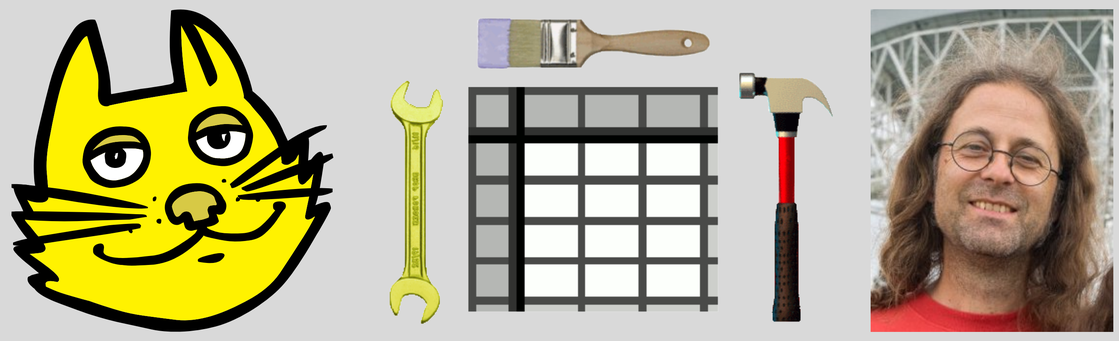

Introduction

TOPCAT is an established interactive GUI desktop tool for data analysis of tables, offering visualisation, crossmatching and access to VO services among other capabilities. STILTS is a suite of command-line tools providing a scriptable interface to much of the same functionality. While scripting is a powerful way to approach many data analysis tasks, the learning curve for STILTS is rather steeper than for its point'n'click counterpart, with the result that some TOPCAT users may be reluctant to use the scripting capabilities on offer because of the (perceived?) difficulty of learning to use them.

To address this, many windows in TOPCAT can now display to users the STILTS invocation equivalent to the operation being performed by the GUI, ready for cut'n'paste into a shell.

Availability

STILTS command reporting for visualisation windows has been available since TOPCAT v4.5 (2017). At the current release v4.10-1, this feature is added in a number of other places too.

The **STILTS** button now appears on these windows:

- All plot types 
  → commands: `plot2plane`, `plot2sky`, `plot2cube`, `plot2sphere`, `plot2corner`, `plot2time`
- Crossmatches 
  → commands: `tmatch2`, `tmatch1`, `tmatchn`, `tskymatch`
- TAP 
  → commands: `tapquery`
- CDS Upload X-Match 
  → commands: `cdsskymatch`
- Single Cone Search, SIA, SSA 
  → commands: `tcone`
- Multiple Cone Search, SIA, SSA 
  → commands: `coneskymatch`

Limitations

The equivalent STILTS commands are reported on a best-efforts basis. What's presented is a reconstruction by TOPCAT of the best corresponding STILTS command, it is not a simple serialization of the action taken by TOPCAT; unfortunately the UIs differ too much to make that possible. Usually pasting the reported command into the shell works correctly, but this isn't guaranteed.

One thing that can go wrong is reference to state that cannot be represented on the command line; tables that exist as files and selections defined by expressions can appear in a command line, but dynamically-created tables or hand-drawn row selections cannot. The application is also unaware of user shell syntax details such as line continuation characters.

Some measures are taken to mitigate these issues:

- coloured text is used to flag parts of the command line suspected or known to cause trouble
- dummy execution is performed and identifiable syntax errors are described using an **Error** button
- formatting options allow user configuration of line endings, quote style, indentation etc

Even if the reported command doesn't execute without error, it provides a good starting point from which a working invocation can be written.

Note also that STILTS can do *lots* of things not covered by this functionality, including flexible pipeline processing.

Conclusion

The (mostly) new STILTS buttons in TOPCAT v4.10-1 should make it easier to get going with the command-line interface to all your favourite TOPCAT functionality. If you've been putting off using STILTS because it looks too difficult, now's the time to try it out!

http://www.starlink.ac.uk/topcat/ http://www.starlink.ac.uk/stilts/

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