Independence Tests

How to run Hlt1 independence tests on the LSF batch or Dirac with ganga

The scripts now live in the `Hlt/Hlt2CommissioningScripts` package. You need to use MooreOnline rather than Moore, since this relies on the TupleHltDecReports tool which lives in `Hlt/IndependenceTests` which is only included in MooreOnline in recent releases.

```
SetupProject MooreOnline v24r1 --build-env
getpack Hlt/Hlt2CommissioningScripts
```

Now we need to get the list of Hlt1 and Hlt2 line names. Edit the following script to choose whatever settings you want.

```
python scripts/Independence/MooreGetLines.py
```

Then we need to auto-generate the Moore scripts for the N + 1 lines (the +1 being the "all lines" version).

```
./scripts/Independence/make_hlt1_scripts.py
```

Then submit these to ganga

```
ganga -i scripts/Independence/ganga_Hlt1.py
```

Once you have the "AllLines" job, and at least one single line job completed, you can run this script to list the location of the tuples in your gangadir

```
scripts/Independence/list_jobs_Hlt1.py
```

Finally, you can analyse the tuples

```
scripts/Independence/independence.py
```

Older Instructions

For quick test (what is done in the nightlies) Setup:

```
SetupProject Moore v20r2 --build-env
getpack Hlt/IndependenceTests head
cd Hlt/IndependenceTests
cd cmt
cmt make
cd ..
SetupProject Moore v20r2
```

Run the test like this:

```
python tests/options/test_independence.py
```

Can set various options, e.g.

```
python tests/options/test_independence.py --Hlt1Lines=Hlt1TrackAllL0;Hlt1TrackMuon --Settings=Physics_September2012
```

And you can make random fake mismatches like this

```
IndependenceTests < LHCb < TWiki
```
python tests/options/test_independence.py --fake_rate=0.8

**Results**

* With Moore v14r5p2

**Introduction**

The HLT consist of so-called trigger lines, each line being optimised to cover a certain class of events of interest. All lines operate independently. Their independence is checked by running all lines alone on a large NoBias sample, and making sure that the results are compatible with running all lines simultaneously.

The independence tests are run in the nightlies as part of the Moore tests. The trigger decisions of all Hlt1&2 lines individually are compared to the decisions when running all the lines together. If the decisions match, the message "No mismatches found." is printed. When something is wrong, a list of the mismatches are printed.

**Organization of the code**

The code is kept in the Moore svn repository, under the directory Moore/Hlt/IndependenceTests.

**Commands**

To run the independence tests use the command:

```bash
Moore/Hlt/IndependenceTests/tests/options/test_independence.py
```

**Instructions**

**Working setup for Moore v13r4p1**

```bash
SetupProject Moore v13r4p1 --build-env
cd ${User_release_area}/Moore_v13r4p1/
getpack Hlt/IndependenceTests v1r2p1
cd ${User_release_area}/Moore_v13r4p1/Hlt/IndependenceTests/
cd cmt; cmt make; cd..
```

Running on the LSF batch system requires the following setup (there is probably a better way of doing this).

```bash
SetupDavinci
which garbage.exe
cp `which garbage.exe` ${User_release_area}/Moore_v13r4p1/InstallArea/x86_64-slc5-gcc43-opt/bin
```

Add some raw data to your ganga box and submit to the LSF batch system.

```bash
SetupGanga v507r12
lhcb-proxy-init
./independence.py -d 2011 --version=v13r4p1 --backend=LSF --hlt1lines=all --hlt2lines=all -f
  --settings='Physics_May2012' --dddbtag='head-20110914' --conddbtag='head-20110901' <name_of_dataset_in_ganga_box>
```

Wait a few hours for the jobs to finish. Resubmit any failures.

```bash
./make_list.py <first_job_number> <last_job_number>
```

Older Instructions

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IndependenceTests < LHCb < TWiki
This makes a file, tuples.lst, with a list of lines and paths to the corresponding tuples. Now check for mismatches.

./find_mismatches.py tuples.lst

-- Main.EricvanHerwijnen - 13-Jan-2012