

* NOT VALID ANYMORE *

How to get weights for the LifetimeTag and SecVtxTags

Basics: you are running 10.0.x (x>=1) and have checked out the 3 packages described here:

https://twiki.cern.ch/twiki/bin/view/Atlas/BTagging#Running_on_AOD

which enables you to rerun b-tagging on AOD level.

Due to persistency problems the procedure to obtain weights has to be (almost) entirely shifted to your analysis algorithm. The only files which had to be updated are:

- LikelihoodTool.cxx
- LikelihoodTool.h

Since I do not want to branch the packages and the HEAD versions are incompatible with 10.0.x already I did not commit any of these changes into the repository. Please copy by hand the following two files:

```
/afs/cern.ch/user/w/wildauer/public/LikelihoodTool.cxx
/afs/cern.ch/user/w/wildauer/public/LikelihoodTool.h
```

to the appropriate locations inside JetTagTools (src and JetTagTools dir).

Now recompile the packages.

Changes in your analysis algorithm

For every tag tool you need a separate likelihood tool in your algorithm. Here is an example for the LifetimeTag2D tool. Assume the analysis algorithms are called myAnalysis.h and myAnalysis.cxx. In myAnalysis.h add the following:

- add a forward declaration

```
class LikelihoodTool;
```

- and a datamember for the tool (one per tag, remember ... this one is for the 2D tag)

```
LikelihoodTool* m_likelihoodTool;
```

In the source files add:

- the following includes

```
#include "JetTagTools/ILikelihoodTool.h"
#include "JetTagTools/LikelihoodTool.h"
```

- in the initialize() method get the tool:

```
/// retrieve the Likelihood tool
ILikelihoodTool* likelihoodTool(0);
StatusCode sc = toolSvc->retrieveTool("Analysis::LikelihoodTool", "AnalysisLikelihoodTool2D");
if (StatusCode::SUCCESS != sc && likelihoodTool == 0)
{
    mLog << MSG::ERROR << "Can't get handle on AnalysisLikelihoodTool2D" << endreq;
```

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```
    return StatusCode::FAILURE;
}
m_likelihooldTool = dynamic_cast< LikelihoodTool* >(likelihoodTool);
if (m_likelihooldTool==0)
{
    mLog << MSG::ERROR << "dynamic cast from ILikelihood to Likelihood did not work!" << endl;
    return StatusCode::FAILURE;
}
m_likelihooldTool->readInHistosFromFile("JetTagRefFileSig/REF/t3333/");
m_likelihooldTool->readInHistosFromFile("JetTagRefFileBkg/REF/t3333/");
m_likelihooldTool->printStatus();
```

- in your execute() method add the following lines and you have the weight:

```
std::vector<double> signif = bLifeInfo2D->significance();
m_likelihooldTool->setLhVariableValue("significance2D", signif);

double weight2D(m_likelihooldTool->calculateWeight());
```

Important: the variable bLifeInfo2D is a pointer to the LifetimeInfo object in the JetTag object. If you do not have it already in the analysis let me know 😊

- last step: modify your jobOptions and add these lines:

```
AnalysisLikelihoodTool2D = Service ("ToolSvc.AnalysisLikelihoodTool2D")
AnalysisLikelihoodTool2D.allLhVariables      = [ "significance2D" ]
AnalysisLikelihoodTool2D.useTheseLhVariables = [ "significance2D" ]
```

For the 1D and 3D weight repeat everything but change 2D correspondingly. For the SecVtxTags it is a bit more work (more variables) which I will post in a bit. Please try this one first.

Attached you find very preliminar plots to show that it works ...

-- DerSchrecklicheSven - 23 May 2005

This topic: Main > BTagging

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