ROOT R
An R Interface for ROOT

Student

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What has been done?

- ROOTR supported by Cling
- Compilation under autotools and cmake: FindR.cmake, FindRcpp.cmake, FindRInside.cmake and CMakeLists.txt were created.
- Support the last version of Rcpp and RInside (Bug fixed in Rcpp "Extra contribution").
- Internal documentation with doxygen.
- Eventloop supported to do plots with R's graphics system.
- Overloading of operators <<,>> and [ ] which let work very easily with the data in both environments.
- Support some ROOT and std c++x11 datatypes, TString,TVectorT, TMatrixT, std::vector, std::array, std::string, std::list ....

What has been done?

- Support to get a R's prompt from ROOT's interpreter with tab completion support.
- User guide written $ROOTSYS/bindings/r/doc/users-guide

  (website).
- The prototype of an R's package was created, this development opens the posibility to run ROOT from R's interpreter directly.
- Tested under some flavors of Gnu/Linux, MacOSX 10.9(xcode) and windows (with cygwin and only works with autotools and disabling opengl).

  NOTE: The code was moved to $ROOTSYS/bindings/r (where you have bindings for python and ruby)

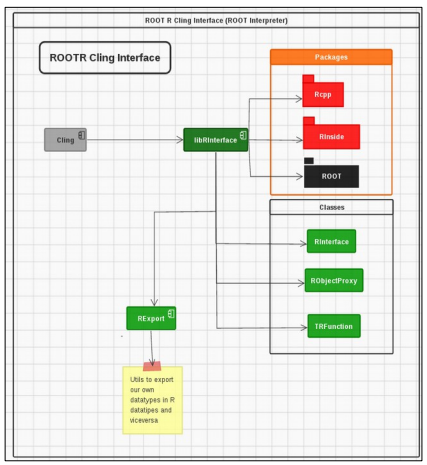
Small examples

```
#include<TRInterface.h>

ROOT::R::TRInterface &r=ROOT::R::TRInterface::Instance();
std::vector<Int_t> v(3);
v[0]=0;
v[1]=1;
v[2]=2;

r["v1"]<<v;
r<<"print(v1)";

TMatrixD m(2,2);
r<<"mat<-matrix(c(0.1,0.2,0.3,0.4),nrow=2)";
r["mat"]>>m;
m.Print();
```

```
[omazapa] [tuxito] [~]$ root -l
root [0] #include<TRInterface.h>
root [1] ROOT::R::TRInterface &r=ROOT::R::TRInterface::Instance();
root [2] r.Interactive()
[r]:matrix(
byrow=     data=      dimnames=  ncol=      nrow=
[r]:matrix(
```

```
require(ROOT)

c1    <- TCanvas('c1','My Bessel')
bessel<- TF1('bessel','TMath::BesselI0(x)')
bessel$SetRange(0,2*pi)
bessel$Draw('') #plotting with ROOT's graphics system
c1$Update()
```

More Information

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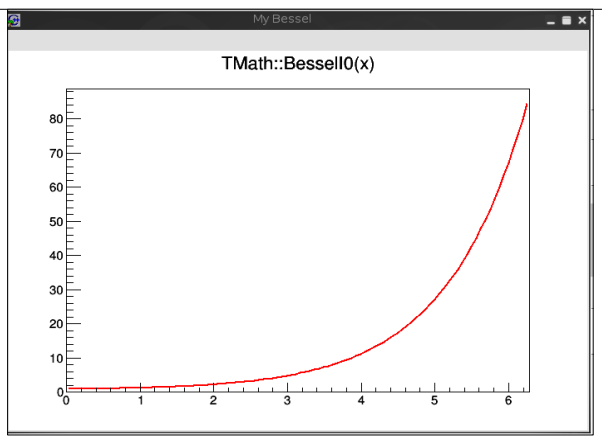
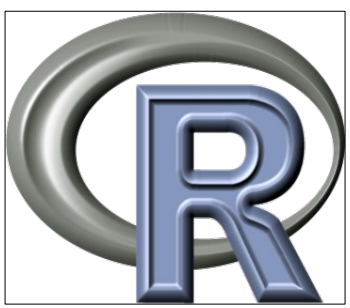
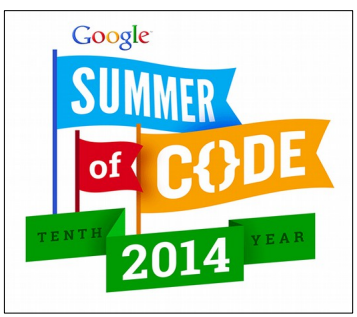






Website

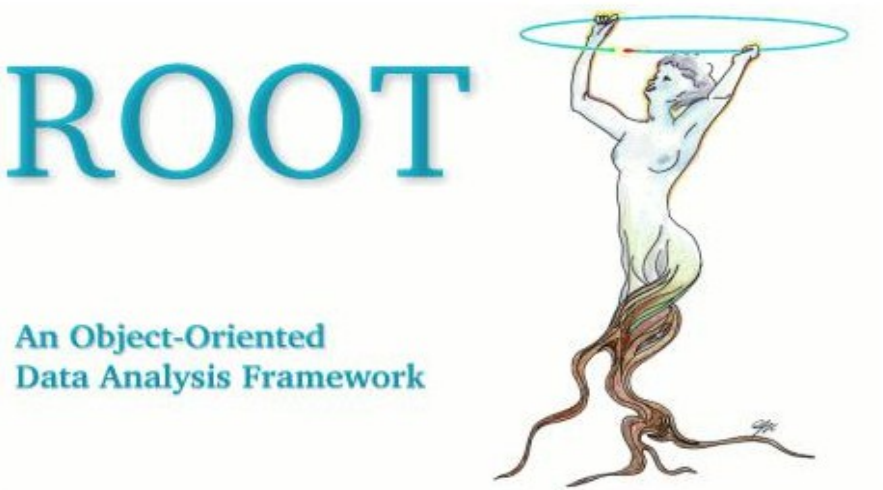
Tutorial

GSoC

What's next?

- To finish the design.
- To write a system that wraps ROOT's classes for R.
- To improve the R's package which loads dynamic libraries from ROOT.
- To improve the system that enables eventloops for both graphics system(R/ROOT).
- A lot of work wraping ROOT's classes.
- Migration to other platforms.
- To write more documentation, examples, etc.
- More coffee and late nights...

Thanks



For letting me be part of your team and for this opportunity.