



TMVA New Features

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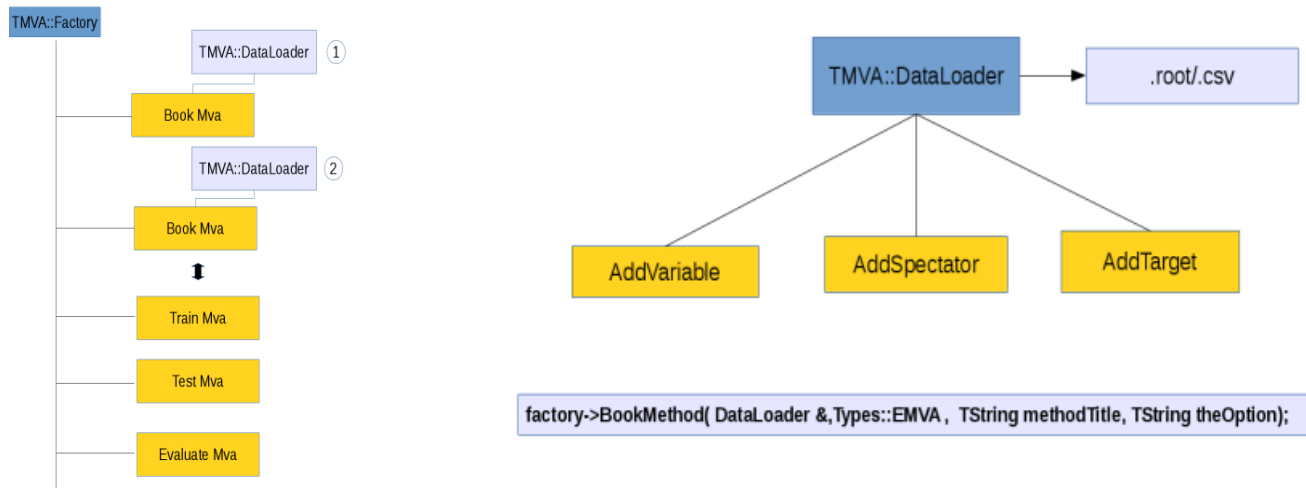


- New TMVA Features
- Data Loader
- Feature Selection
- RMVA
- PyMVA



- **Improved design that allows**
 - **Greater flexibility (modularization)**
 - **Feature Selection, Cross-Validation, new techniques for data storage and manipulation**
 - **Parallelization (OpenMP/MPI/cuda/TBB)**
 - **Integration with Python and R (PyMVA/RMVA)**

- **TMVA::DataLoader** class allows greater flexibility in dealing with data
 - Connection of different features to different classifier methods: Useful for optimization

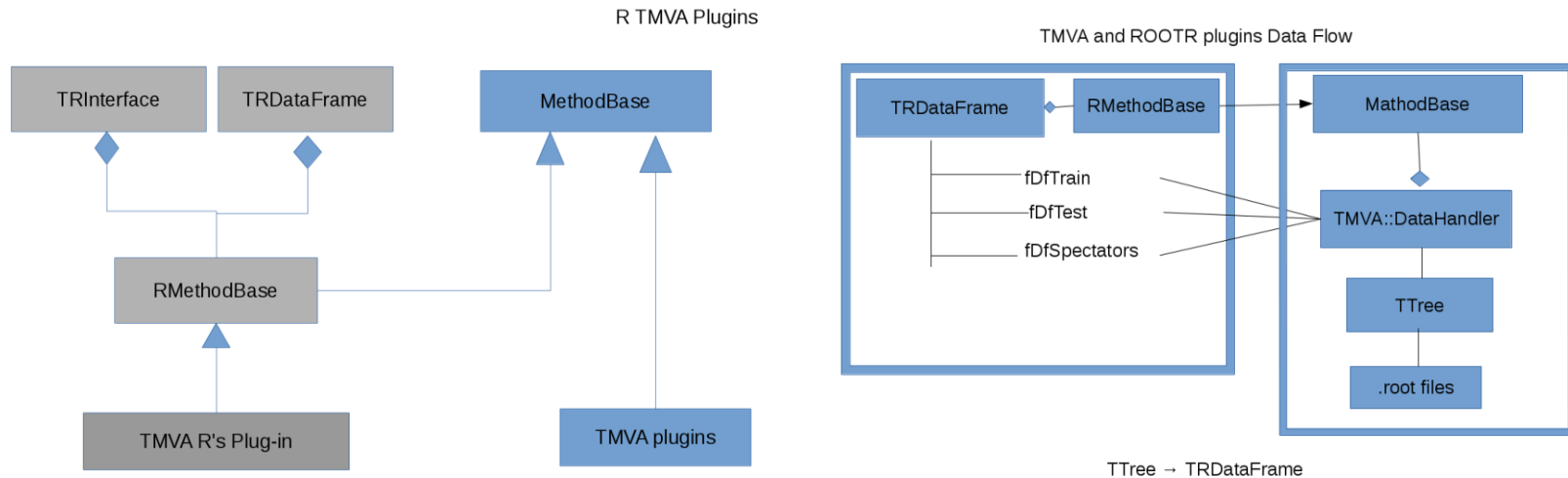


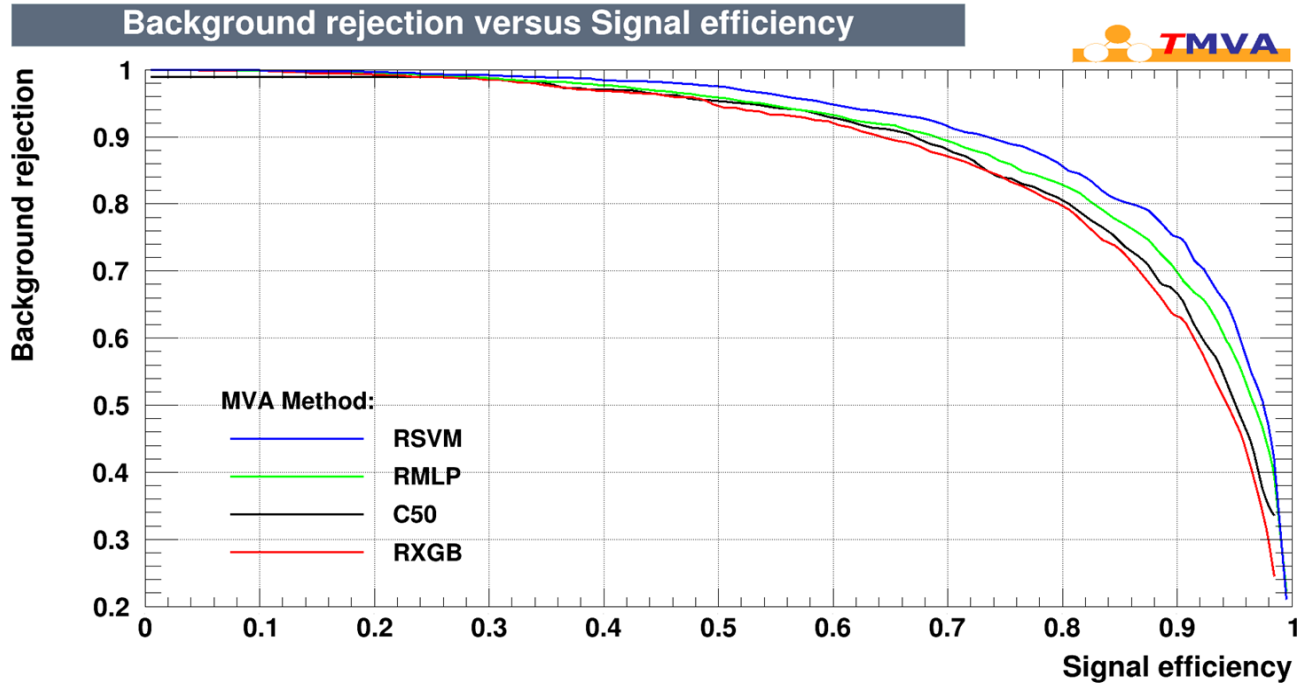
Feature Selection



- **Based on the FAST stochastic wrapper algorithm**
 - **See previous talk and today's tutorial for details**

- **RMVA is a set of plugins for TMVA that allows the use of R's classification and regression packages**



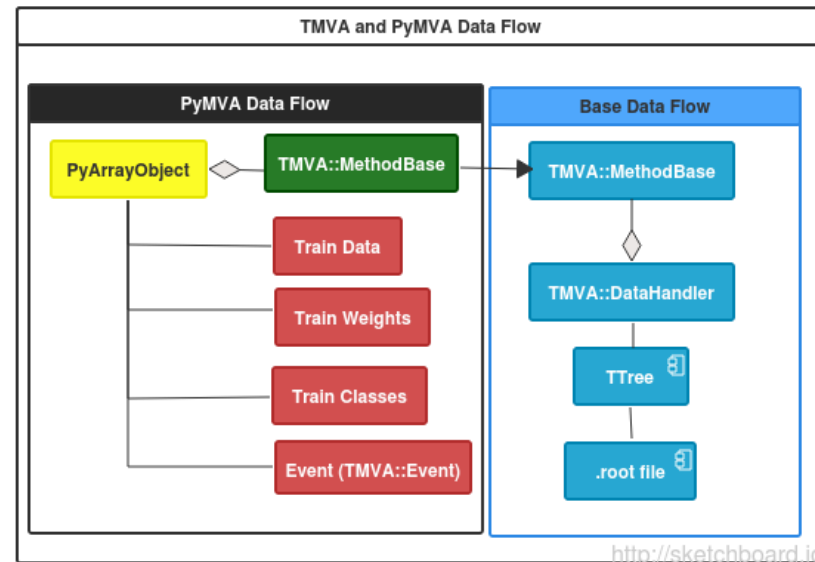
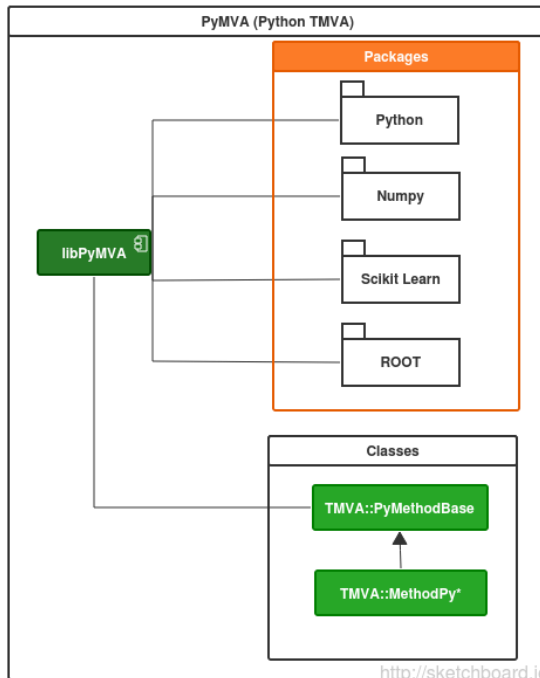


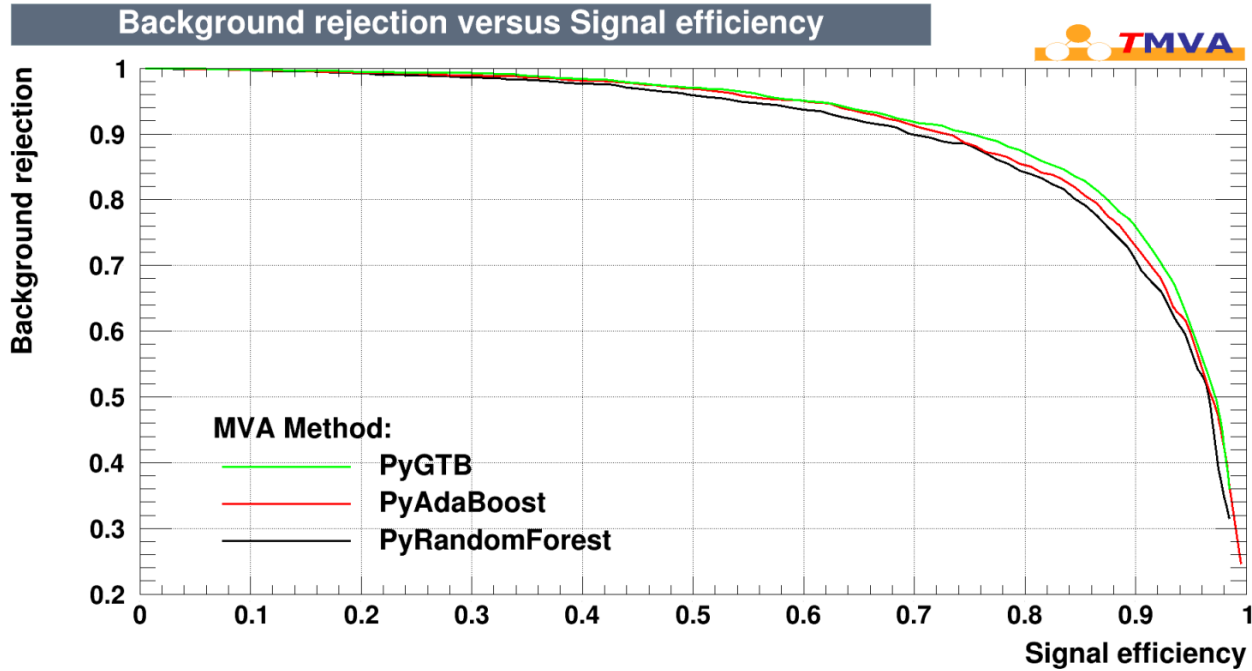
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Evaluation results ranked by best signal efficiency and purity (area)
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MVA Method:      Signal efficiency at bkg eff.(error): | Sepa-   Signifi-
                  @B=0.01   @B=0.10   @B=0.30   ROC-integ. | ration:  cance:
-----
RSVM              : 0.328(08) 0.735(08) 0.924(04) 0.913   | 0.526   1.355
RMLP              : 0.286(08) 0.689(08) 0.899(05) 0.897   | 0.481   1.310
C50               : 0.000(00) 0.671(08) 0.878(05) 0.881   | 0.462   1.253
RXGB              : 0.233(07) 0.643(08) 0.867(06) 0.875   | 0.434   1.194
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- **PyMVA is a set of plugins for TMVA based on python api that allows use of python based ML methods**





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Evaluation results ranked by best signal efficiency and purity (area)
-----
MVA Method:      Signal efficiency at bkg eff.(error): | Sepa-   Signifi-
                  @B=0.01   @B=0.10   @B=0.30   ROC-integ. | ration:  cance:
-----
PyGTB           : 0.343(08) 0.751(07) 0.924(04) 0.914   | 0.539   1.514
PyAdaBoost      : 0.331(08) 0.741(07) 0.918(05) 0.911   | 0.761   0.943
PyRandomForest  : 0.245(07) 0.702(08) 0.905(05) 0.898   | 0.497   1.375
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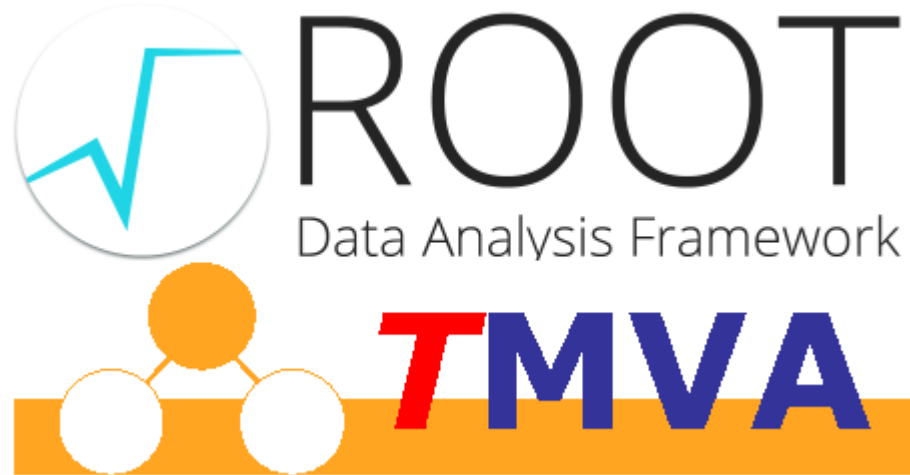
Tutorials



Try the new features tutorial today and the interfaces tutorial on Thursday

More features coming soon.

More Information



Websites: <http://root.cern.ch>

<http://oproject.org>