TerraFerMA
A Suite of Multivariate Analysis Tools

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Version 1.0 has been released
useable by anyone with access to the CLHEP and Root libraries

www-d0.fnal.gov/~smjt/multiv.html

TerraFerMA=Fermilab Multivariate Analysis (aka “FerMA”)

TerraFerMA is, foremost, a convenient interface to various disparate multivariate analysis packages (ex: MLPfit, Jetnet, PDE/GEM, Fisher discriminant, binned likelihood, etc)

User first fills signal and background (and data) “Samples”, which are then used as input to TerraFerMA methods. A Sample consists of variables filled for many different events.

Using a multivariate package chosen by user (ie; NN's, PDE's, Fisher Discriminants, etc), TerraFerMA methods yield probability that a data event is signal or background.

TerraFerMA also includes useful statistics tools (means, RMS's, and correlations between the variables in a Sample), and a method to detect outliers.

TerraFerMA makes it trivial to compare performance of different multivariate techniques (ie; simple to switch between using a NN and a PDE (for instance) because in TerraFerMA both use the same interface!)

TerraFerMA makes it easy to reduce the number of discriminators used in an analysis (optional TerraFerMA methods sort variables to determine which have best signal/background discrimination power)

TerraFerMA web page includes full documentation/descriptions

Future Plans…

To package TerraFerMA with ROOT, dependencies on CLHEP matrix methods and random number generators must be excised.

Process has begun. Predicted completion date: December.

In the meantime, FerMA is fully useable/interfaceable with root-tuples by using it in compiled mode. See the package and users' guide for detailed examples.

TerraFerMA Version 1.0

TerraFerMA documentation:

www-d0.fnal.gov/~smjt/ferma.ps

TerraFerMA users' guide:

www-d0.fnal.gov/~smjt/guide.ps

TerraFerMA package:

…/ferma.tar.gz

(includes example programs)