**Announcement**

MDArray version 0.5.0 has Just been released. MDArray is a multi dimensional array implemented for JRuby inspired by NumPy ([www.numpy.org](http://www.numpy.org)) and Masahiro Tanaka´s Narray (narray.rubyforge.org). MDArray stands on the shoulders of Java-NetCDF and Parallel Colt.

NetCDF-Java Library is a Java interface to [NetCDF files](http://www.unidata.ucar.edu/software/netcdf/index.html), as well as to many other types of scientific data formats.  It is developed and distributed by Unidata (<http://www.unidata.ucar.edu>).

Parallel Colt (<http://grepcode.com/snapshot/repo1.maven.org/maven2/net.sourceforge.parallelcolt/parallelcolt/0.10.0/>) is a [multithreaded](http://en.wikipedia.org/wiki/Thread_%28computer_science%29) version of [Colt](http://dsd.lbl.gov/~hoschek/colt/) (<http://acs.lbl.gov/software/colt/>). Colt provides a set of Open Source Libraries for High Performance Scientific and Technical Computing in Java. Scientific and technical computing is characterized by demanding problem sizes and a need for high performance at reasonably small memory footprint.

**MDArray and SciRuby:**

MDArray subscribes fully to the SciRuby Manifesto (<http://sciruby.com/>).

*“*[*Ruby*](http://www.ruby-lang.org/)*has for some time had no equivalent to the beautifully constructed*[*NumPy*](http://numpy.scipy.org/)*, [SciPy](http://www.scipy.org/), and [matplotlib](http://matplotlib.sourceforge.net/) libraries for*[*Python*](http://www.python.org/)*.*

*We believe that the time for a Ruby science and visualization package has come. Sometimes when a solution of sugar and water becomes super-saturated, from it precipitates a pure, delicious, and diabetes-inducing crystal of sweetness, induced by no more than the tap of a finger. So is occurring now, we believe, with numeric and visualization libraries for Ruby.”*

**MDArray main properties are:**

* Homogeneous multidimensional array, a table of elements (usually numbers), all of the same type, indexed by a tuple of positive integers;
* Easy calculation for large numerical multi dimensional arrays;
* Basic types are: boolean, byte, short, int, long, float, double, string, structure;
* Based on JRuby, which allows importing Java libraries;
* Operator: +,-,\*,/,%,\*\*, >, >=, etc.;
* Functions: abs, ceil, floor, truncate, is\_zero, square, cube, fourth;
* Binary Operators: &, |, ^, ~ (binary\_ones\_complement), <<, >>;
* Ruby Math functions: acos, acosh, asin, asinh, atan, atan2, atanh, cbrt, cos, erf, exp, gamma, hypot, ldexp, log, log10, log2, sin, sinh, sqrt, tan, tanh, neg;
* Boolean operations on boolean arrays: and, or, not;
* Fast descriptive statistics from Parallel Colt (complete list found bellow);
* Easy manipulation of arrays: reshape, reduce dimension, permute, section, slice, etc.;
* Reading of two dimensional arrays from CSV files (mainly for debugging and simple testing purposes);
* StatList: a list that can grow/shrink and that can compute Parallel Colt descriptive statistics.

**Descriptive statistics methods provided by MDArray:**

auto\_correlation, correlation, covariance, durbin\_watson, frequencies, geometric\_mean, harmonic\_mean, kurtosis, lag1, max, mean, mean\_deviation, median, min, moment, moment3, moment4, pooled\_mean, pooled\_variance, product, quantile, quantile\_inverse, rank\_interpolated, rms, sample\_covariance, sample\_kurtosis, sample\_kurtosis\_standard\_error, sample\_skew, sample\_skew\_standard\_error, sample\_standard\_deviation, sample\_variance, sample\_weighted\_variance, skew, split, standard\_deviation, standard\_error, sum, sum\_of\_inversions, sum\_of\_logarithms, sum\_of\_powers, sum\_of\_power\_deviations, sum\_of\_squares, sum\_of\_squared\_deviations, trimmed\_mean, variance, weighted\_mean, weighted\_rms, weighted\_sums, winsorized\_mean.

**MDArray installation and download:**

* Install Jruby
* jruby –S gem install mdarray

**MDArray Homepages:**

* <http://rubygems.org/gems/mdarray>
* <https://github.com/rbotafogo/mdarray/wiki>

**Contributors:**

Contributors are welcome.

**MDArray History:**

* 16/05/2013: Version 0.5.0 - All loops transferred to Java with over 50% performance improvement. Descriptive statistics from Parallel Colt;
* 19/04/2013: Version 0.4.3 - Fixes a simple, but fatal bug in 0.4.2. No new features;
* 17/04/2013: Version 0.4.2 - Adds simple statistics and boolean operators;
* 05/05/2013: Version 0.4.0 – Initial release.