**Operations available in Vectools**

Analysis and Statistics

 confmat - Generates a confusion matrix from a set of predictions.

 divide - Divides values in a table by another.

 max - Returns a vector containing the maximum value for each column in a matrix.

 mean - Returns a vector containing the mean/average value for each column in a matrix.

 median - Returns a vector containing the median value for each column in a matrix.

 min - Returns a vector containing the minimum value for each column in a matrix.

 mode - Returns a vector containing the mode for each column in a matrix.

 pca - Maps data to a lower dimensional space with using principal component analysis.

 pearson - Calculates the Pearson correlation coefficient with a cutoff at a given threshold.

 percentile - Returns a vector containing the percentile for each column in a vector.

 roc - Calculates the receiver operating characteristic (ROC) curve for a binary classification.

 sd - Returns a vector containing the standard deviation of values within each column in a matrix.

 shape - Finds the shape of a matrix.

 spearman - Calculates the Spearman's rank correlation coefficient.

Descriptors

 ncomp - Calculates the n-composition of a FASTA sequence (default: amino acid composition).

 summary - Summarizes a matrix in a column-wise manner.

 trans - Calculates the percent transitions of a single character or group to another.

Manipulation

 aggregate - Aggregate svalues into rows based on key-columns.

 append - Appensd values to a given matrix row or column wise.

 chop - Removes rows from a matrix.

 colmerge - Combine or split columns using a delimiter.

 concat - Concatenates two matrices at a given axis.

 creatematrix- Creates matrices filled with a value or special matrices, such as identity matrices.

 format - Converts between various vector formats.

 join - Joins two or more matrices on one or more columns.

 slice - Manipulates matrix columns.

 sort - Sorts a vector based on columns given by keys.

 transpose - Transposes a matrix.

 unique - Returns unique rows in a matrix.

 vrep - Returns rows which contain a given set of elements.

Math

 add - Adds matrices or scalars to a matrix.

 determinant - Calculates the determinant for square matrices.

 dotproduct - Calculates the dot product of two vectors.

 eigenvalues - Calculates the eigenvalues of a matrix. The order is the same as in the function eigenvectors.

 eigenvec - Calculates the eigenvectors of a matrix. The order is the same as the function eigenvalues.

 inverse - Calculates the inverse matrix for square matrices.

 multiply - Multiplies matrices via matrix-multiplication or scalars.

 subtract - Subtracts matrices or scalars from a matrix.

 sum - Sums the columns of a matrix.

Normalization

 medpolish - Normalizes a matrix via median polish normalization.

 quantnorm - Normalizes a matrix via quantile normalization normalization.

 zscorenorm - Normalizes a matrix via z-score normalization normalization.

Supervised Learning

 linreg - Performs linear regression via least squares on a set of vectors.

 svmclassify - Predicts the class of unknown vectors using an SVM model.

 svmtrain - Performs k-fold testing followed by independent set testing on a set of training vectors.

Unsupervised Learning

 affcl - Performs affinity clustering on a set of vectors.

 dbscan - Performs density based clustering of a set of vectors.

 hierarc - Performs hierarchical clustering and returns cluster assignments or a linkage matrix.

 kmeans - Performs k-means clustering on a set of vectors.

 silscore - Calculates the silhouette score of a set of clusters.