

Package Data

Maintains data structures that can be used to load/manipulate data for Graphical or Learning purposes.

Package Logical Structure:

- Package data
 - <<Interface>> DataObject
 - <Object> DataArray

DataObject - Defines methods required to be implemented by data structures.

DataArray - ArrayBased data structure, allows you to load the entire data set into memory.

DataObject Interface Methods:

To create a DataObject

- DataObject() - Standard Constructor for empty DataObject
- .readCSV() - Data from a CSV
- .fromMap() - Data from a hashmap

To modify Data

- .drop(axis=0/1, string ... labels)
- .drop(axis=0/1, int, indexes)
- .dropRows(int index)
- .dropRows(string labels)
- .dropColumns(int index)/
- .dropColumns(string labels)
- .concatRows(DataObject) - Joins along rows
- .concatColumns(DataObject) - Joins along Columns
- .concat(DataObject, row/col) - Joins along rows or columns

To show information about it:

- .shape() - Provides the shape of the data(rows x columns)
- .info() - Prints out basic information about data (row/col/label/non-null/dtypes)
- .head() - Prints the top five rows of data
- .head(int n) - Prints the top n rows of data
- .tail() - Prints the last five rows of data
- .tail(int n) - Prints the last n rows of data

DataArray - Simply provides implementation for all DataObject methods.

Package Learning

Implements all the actual machine learning or AI algorithms

Package Logical Structure:

- Package learning
 - Package supervised_learning
 - <Interface> SupervisedInterface
 - Package classification
 - <Class> LogisticRegression
 - Package regression
 - <Class> LinearRegression
 - <Class> PolynomialRegression

Package SupervisedLearning

- Package Classification
 - Class Logistic Regression
 - LogisticRegression() - Default constructor
 - .train(DataObject do) - Trains the model based on data
 - .predict(int ... inputs) - Predicts the y from the inputs
- Package Regression
 - Class LinearRegression
 - LogisticRegression() - Default Constructor
 - .train(DataObject do) - Trains the model based on data
 - .predict(int ... inputs) - Predicts the y from the inputs
 - Class PolynomialRegression
 - PolynomialRegression() - Default Constructor
 - .train(DataObject do) - Trains the model based on data
 - .predict(int ... inputs) - Predicts the y from the inputs

Package Evaluators

Allows you to easily evaluate models

Package Logical Structure:

- Package evaluators
 - Package classification
 - `<class> ConfusionMatrix`
 - Package regression
 - `<class> MeanSquared`

Package Graphical

Allows you to easily graphically display models

Package Logical Structure:

- Package graphical
 - <class> Window
 - <class> Plot

Window Methods:

- Window(title, width, height) - Creates a new window
- .setTitle(String title)
- .setSize(int width, int height)

Plot Methods:

Plot() - creates a basic empty plot

plot(Array[] yValues) - Generates plot assuming x values are 0, 1, 2... i

plot(Array[] xValues, yValues) - Generates plot with provided values

plot(Array[] xValues, yValues, String format) - Generates plot using format for colors

plotLine(string equation) - Plots line using "y=mx+b" or "mx+b"

plotLine(double m/slope, double b)