**Using IMP Standard6**

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:NOTE Standard6Beta is a BETA VERSION of this software. It appears to be working correctly to date, but it should have further quality checking done on it.

**Introduction**

Standard 6 is part of the IMP program suite, and requires input files in the X1Y1…CS format used by IMP. If you have not already done so, read the files "WhatIsIMP" and "CoordGenManual" before proceeding.

Standard6 is a program that regresses a set of shape variables (landmark data or Partial Warp+Uniform scores) on an independent variable x, and then uses the regression model to remove the variance attributable to the independent variable x from the data, and outputs a data set at a user-specified value of x.

One use of this program is to remove size-dependent variation from two or more sample populations, to allow us to determine if there is any variation in shape between the two populations that is not attributable to size. To do this, the program forms a regression model, regressing the landmark or PW+U data on CS (or LN(CS), or Log(CS)). The residuals for each sample are then obtained. These residuals are then added to the predicted specimen at some specified value of CS, where the predicted value is taken from the regression model.

**Operation of the Program:**

**Load Data Set**

This button loads the data set, in the X1Y1…CS format. The data set may be landmark data in any superposition desired, or Partial Warp + Uniform component scores. When the data file is loaded, it will be plotted in blue. Note that the plot routine assumes that the file contained landmark data, if the file is PW+Uni scores, the plot will be meaningless.

The file name, the number of specimens and the number of landmarks in the data set will appear in the file window when the file is loaded. Note that if the data is PW+Uniform, this window will indicate the number of PW+Uniform components in the input data file, rather than the number of landmarks. The PW+Uniform components will have 2 fewer pairs of values than the number of landmarks.

**Show Data Set**

This button plots the data set in blue.

**Independent Variable Source**

Standard6 will regress the input variables on an independent variable, hereafter referred to as x, which may be either the centroid size (CS) of the specimens, which is included as the last column of the input data file in the IMP file format, or some other variable.

**Use x=CS**

Choosing this button specifies that the independent variable x used is to be the centroid size.

**Load x-List**

Choosing this option causes a file loading menu to come up. The user needs to specify an input file that contains a list of x-values for some independent variable to be used in the regression. The x-list input file must be a single column of data, with one entry per specimen in the data input file. The values in the x-list must be real or integer numbers, with no formatting codes. Labels may be attached after the numbers, delimited by a % sign in front of the label. The program will simply ignore these labels, but users may find the labels helpful.

An error message will appear if the number of samples and the number of values in the x-list do not match. You will get an error message if there is a carriage return after the last value in the x-list, so check this if you get an error message that

doesn't seem to make sense.

**Accept: Regression Function**

It is often useful to be able to regress on the LN or Log (base 10) of the centroid size, as an age proxy. This button allows you to specify a function of the x-values to use, x, Ln(x) or Log(x). You must choose one of these, and then hit the Accept button to proceed. Note that when you hit the button to specify one of these, the minimum, maximum, mean and median x-values in the list will be displayed in the boxes below.

**Accept: Standardize on x=**

This button requires the user to specify the value of x on which to standardize the data. The output file will be the residuals of each specimen added to the predicted variable (landmark or PW+Uniform values) at the x value listed in the "standardize on x=" box. The software inserts the minimum x-value in the list into this box. The user may alter this as desired. You must click on the Accept box to continue.

**Do Regression**

This button causes the software to actually carry out the regression.

**Save Standardized Data**

This saves the standardized data in the X1Y1..CS output file format. The output data can then be used as an input file for another program.

**Show Standardized Data**

This button plots the standardized data on the plot in red. The mean value of the standardized data is shown as a black square on the diagram.

**Copy Image to Clipboard**

This copies the image currently shown on the screen to the Windows clipboard as an enhanced metafile. If the image does not copy correctly, try resizing the program window slightly and repeating the copy operation. The copy routine seems to be sensitive to window size.

**Clear Data**

This button clears the data set, and resets the program for another input file.

**Remove Axis/ Restore Axis**

These buttons turn the axis on or off as desired.

**Clear Image**

This option clears the image on the screen. The user can then plot the input data set or the standardized data.

**Exit**

Quits the program.

***SF***

Invokes the *spiffy fish* option.