**Creates the GUI Component**

\_\_init\_\_

* Creates an app\_state variable
* Calls **setup\_window**
* Creates an object for running PCA Analysis
* Declares all the GUI component variable
* Calls **create\_components**
* Calls **setup\_layout**

setup\_window

* Creates a title for the application
* Sets the size of the application based using OS type
* Sets a background color
* Sets a minimum Size

create\_widgets

* Initializes all of the GUI component variables
* Adds bindings to required GUI components
* Adds the styling arguments to GUI components

setup\_layout

* Creates a row and column configuration for the GUI
* Adds all of the GUI components to itself

**Data Handeling Methods**

run\_analysis

* Determines if the application data is ready to run PCA analysis and if PCA needs to be run again on the data
* Runs PCA analysis
* Calls **update\_results\_display**
* Sets df\_updated variable to False

select\_output\_directory

* Prompts user to select an output directory
* IShows an error if no directory was selected and exits
* Sets the output directory in app\_state to the selected directory
* Updates the output directory label on the GUI
* Shows a confirmation with the selected directory

**UI Update Methods**

update\_data\_info

* Exits if the df does not exist
* Creates info\_text with the header, “Data Information”
* Adds the Dataset shape to the info\_text
* Adds the list of column names to the info\_text
* Insert the new info\_text into the data\_insight\_summary GUI object
* Calls **update\_figure**

update\_results\_display

* Creates a summary with the header, "PCA Analysis Results"
* Adds the number of components, original shape, and prepared shape to the summary
* Adds the explained Variance Ratios for each PCA component to the summary
* Inserts the new summary into the data\_insight\_summary GUI object

update\_figure

* Destroys the Canvas for the current plot
* Sets the figure to use tight layout
* Generates a new plot\_canvas using the app\_state figure
* Draws the plot\_canvas
* Creates a figure with the plot\_canvas and adds it to the widget

create\_blank\_fig

* Creates a new figure using the figure size in app\_state
* Creates a new ax on the figure
* Sets the grid value of the new ax

**Event Handlers**

on\_close

* Destroys the plot\_canvas if it exists
* Closes all plt objects
* Destroys self

\_bind\_mousewheel

* Binds the mousewheel to the scrollable options canvas

\_unbind\_mouswheel

* Unbinds the mousewheel from the scrollable options canvas

\_on\_mousewheel

* Scrolls the scrollable options canvas in the direction of the mousewheel