

YAGI: a tool to help Newcomers to SAS efficiently learn Code and Syntax

Steph-Yves Louis, University of South Carolina- Columbia; Fatima Christina Rolland, Belmont Abbey College

README

Version: demo

Date: 09/27/2017

Operating System: Windows

Installation: run the setup.exe and follow instructions on the screen

Description: efficient and user-friendly local software meant to help the learning process of SAS for the newcomers to statistical computing and also serve as a dictionary for returning users.

Features: returns a definition, a link for more online documentation, and some example codes

ABSTRACT

SAS is one of the most widely used software packages for statistical calculations and data manipulation purposes across many fields. While books and online resources already exist to help with syntax, researching these materials can be tedious and time-consuming. For a new student, the learning can be overwhelming. Even for an individual familiar with the program, attempts to retrieve code from other users' codes may take longer than expected. Considering the above issues, YAGI, a software designed to facilitate the learning for novice coders and to represent a personal dictionary of codes for any returning user, may present a solution.

INTRODUCTION

The design for YAGI was conceptualized around the objective that it should appear very compelling to a novice SAS user. Considering that a novice coder's research for appropriate SAS codes can be time-consuming, YAGI would quickly provide a satisfactory answer to his/her question. Instead of dealing with the hustle to debug written SAS codes, YAGI would provide pre-built codes along with a code-builder tool to help with his/her task. As the end result, YAGI was built to only consist of a search-bar, a definition, a link for additional research, some sample codes, and an code-builder wizard. The use of Python 3 as the programming language, Kivy as the Python Graphical User Interface (GUI) package, and SQLite as the database made the YAGI project see light.

YAGI AND THE HOMEPAGE

Upon running YAGI on the computer, the homepage () opens up and one can see the following widgets:

1. The YAGI logo
 2. The Search Bar
 3. The 'Submit' button
 4. The 'Sygi' or 'Suggestion Mode' button
 5. The 'How to Use YAGI' button
 6. The 'Developer's & Credits' button
 7. The 'View / Delete Entries' button
 8. The 'Add New Entries' button
- body of the paper. This paragraph uses the PaperBody style.

Figure 1 is screen capture of the Homepage.

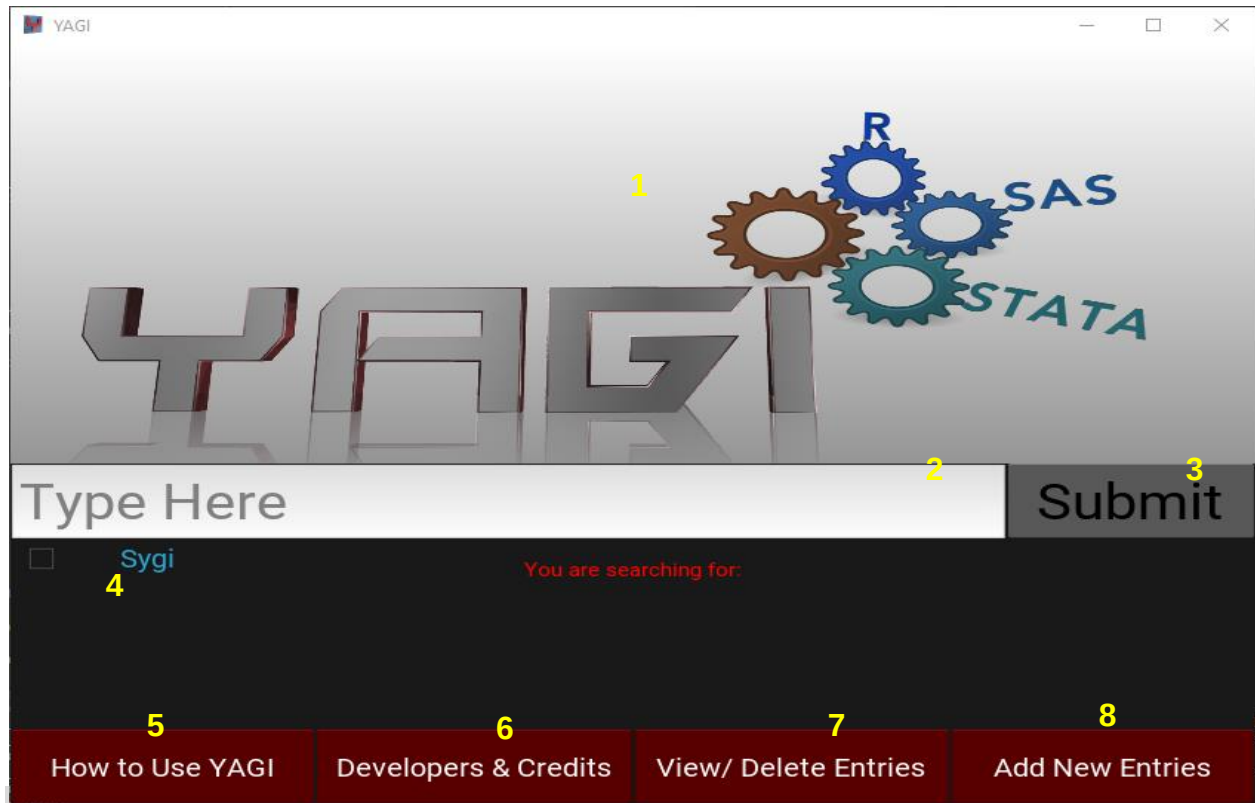


Figure 1. Screen Capture of Homepage

Image displaying the homepage with the YAGI Logo, a text input, and 6 buttons.

FUNCTIONALITIES OF THE HOMEPAGE WIDGETS

2. The Search Bar collects the user's input to search in YAGI
3. The 'Submit' button executes the research
4. The 'Sygi' or 'Suggestion Mode' button takes the user to a page for suggestions to his search
5. The 'How to' button provides the instructions to effectively use YAGI
6. The 'Developer's & Credits' button provides information on the credits and software developer
7. The 'View / Delete Entries' button allows the user to see or delete his personal added entries
8. The 'Add New Entries' button allows the user to extend the YAGI database by adding new personal entries

ADDING & DELETING NEW ENTRIES

YAGI also allows a user to input his personal entries into the database. Upon answering a series of questions, the user's new entry will be saved in the software. In order to access the previously saved entry, the user only needs to add the characters [y] along with their search. Figure 2 demonstrates a preview of the addition of a new entry.

A current limit of 20 personal entries has been set. Hence, in order for the user to keep adding new entries, he will need to delete other previous entries. Figure 3 demonstrates a preview of the viewing or deletion of an existing entry.

Figure 2. is a screen capture of the Screen to add new entries.

The screenshot shows a web browser window titled 'YAGI'. The main content area has a dark background with red text labels for each input section. The first section is 'New YAGI-Name' with a text input field containing the placeholder 'Provide a UNIQUE yaginame for your new entry.'. The second section is 'STATISTICAL DEFINITION' with a text input field containing 'Type Here'. The third section is 'BROWSER Link' with a text input field containing 'Type Here'. The fourth section is 'SAS CODES' with a large text input field containing 'Type Here'.

Figure 2. Screen Homepage

Image displaying a preview of the addition of a new entry in YAGI.

Figure 3. is a screen capture of the Screen to add new entries.

The screenshot shows a web browser window titled 'YAGI'. The main content area has a dark background. At the top, a light gray bar displays '3 entries in your database'. Below this, the text 'Select the Entry, then Click on Delete' is centered. There are two buttons: a green button labeled '<<-o Back to the Homepage' and a dark red button labeled 'Delete [X]'. Below the buttons is a table with three rows, each representing a new entry. The table has a dark green background with white text.

new_entry#1	<=====>	2017-09-28 21:55:21
new_entry#2	<=====>	2017-09-28 21:55:37
new_entry#3	<=====>	2017-09-28 21:55:50

Figure 3. Screen of View/ Delete Screen

Image displaying a preview of the deletion of a personal entry in YAGI

MECHANISM FOR A YAGI SEARCH

The mechanism for YAGI begins in the search bar. Upon submission of a search, the software takes the user's input and tries to match the word with one of the existing references in the database. Two different outcomes may erupt:

1) If there is no match, YAGI returns that “no results have been found” and redirects the user to “try again” with better spelling or to use the suggestion mode button on the homepage.

2) If there is a match, then YAGI would instead return an answer in the following order:

- A definition
- A link for the additional research online
- A basic SAS example of codes or instructions
- An option for the user to create his own example based on his research using the 'Build Your Example' tool

Figure 4. displays user typing 'mean' in the search-bar before submitting his search.

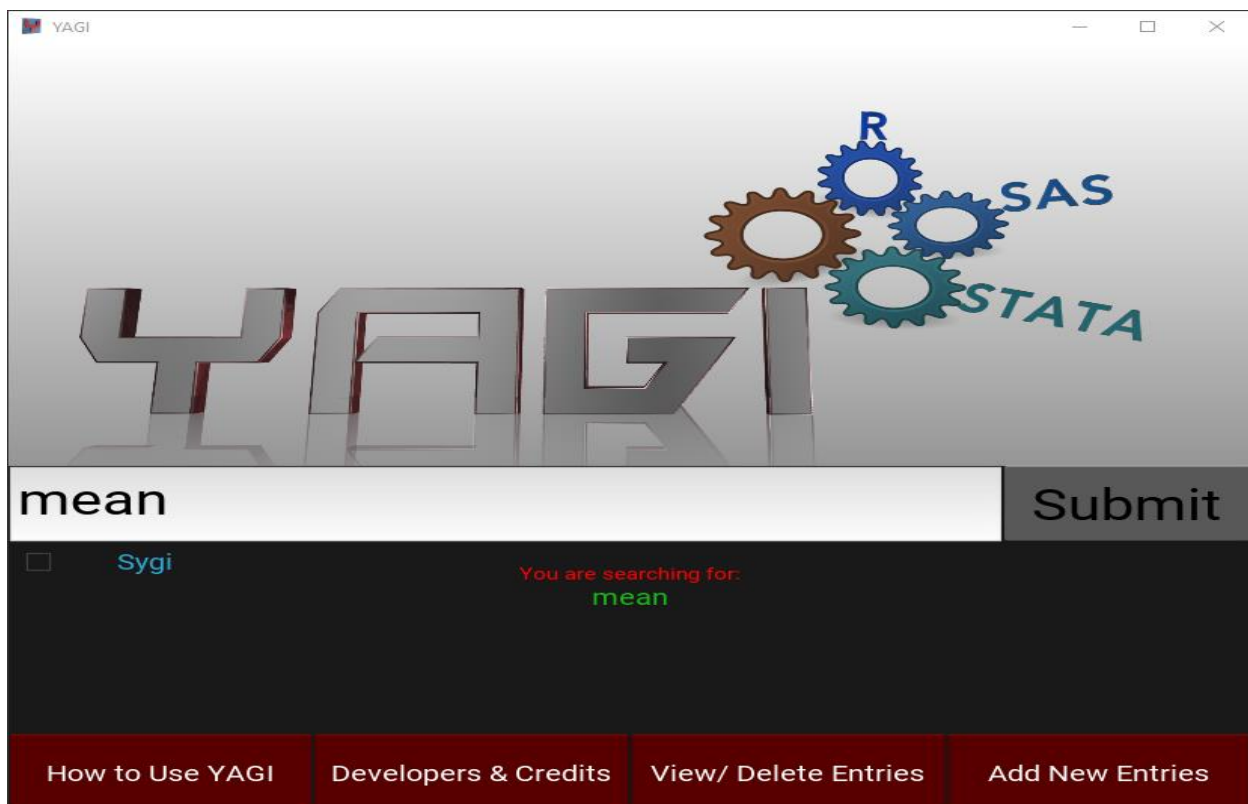


Figure 4. Screen of Homepage

Image displaying a preview of the word 'mean' in the search bar prior to submission

YAGI AND THE RESULTS PAGE

Upon submitting a phrase for YAGI to search, the user obtains a resulting answer on the results page as a set of 4 blocks:

- The first block is a SAS definition pulled right out of the SAS Support Website.
- The Second block posts the link of the latter block.
- The third block is the satisfactory Example that the user can see.
- The last block is an option, through which the user gets to build an example similar to the one in the 3rd block by inputting all of the needed information directly in YAGI interface. The finished product is a code compilation which the user can copy to paste in SAS himself.

Figure 5. displays the results screen.

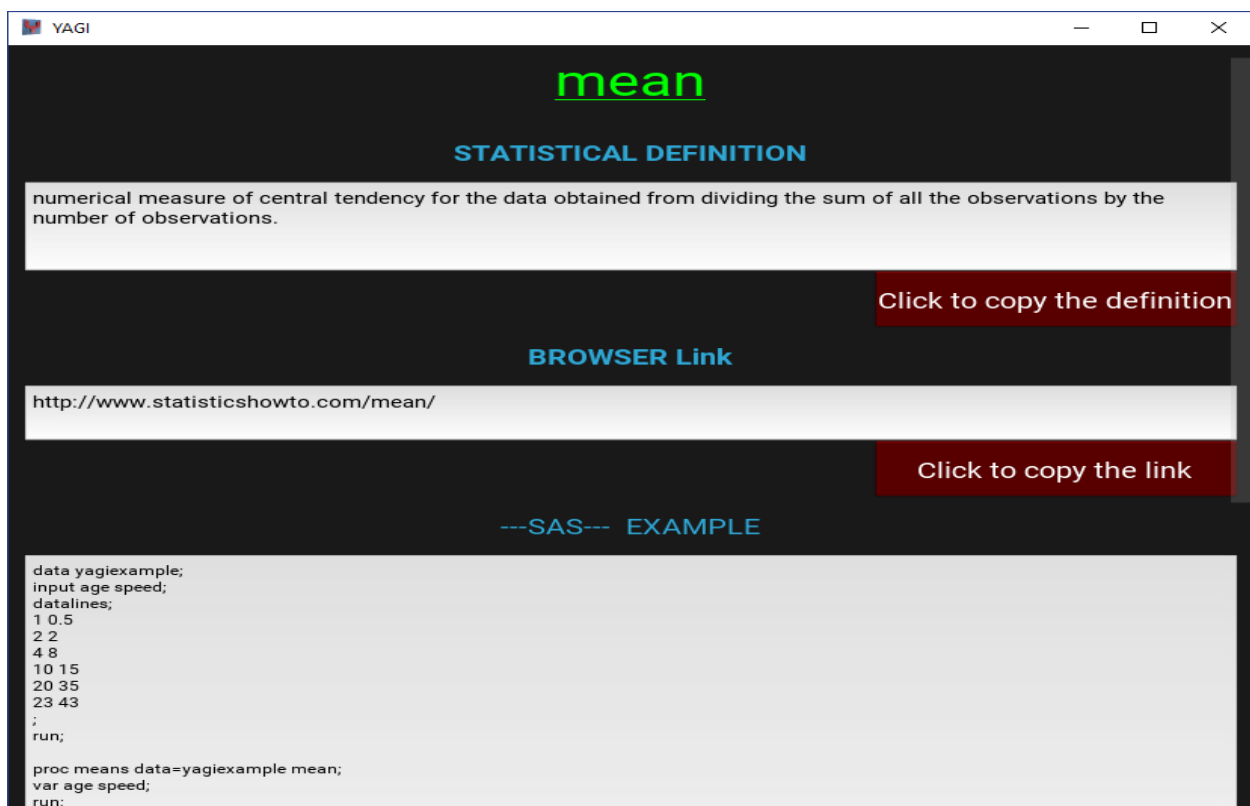


Figure 5. Screen of Homepage

Image displaying the results for the search 'mean'

YAGI AND THE B.Y.O. EXAMPLE TOOL

At the bottom of the results page, one may find the 'B.Y.O. Example' which enables the user to create his own example of codes. For YAGI to build some examples codes, the software applies a specific algorithm that takes the user's input for his data and then returns a nicely compiled set of SAS codes in the correct syntax. Given the answer, the user may edit his SAS codes prior to copy them into SAS. Figure 6 displays the set of questions to answer in order for YAGI build an example of proc means to find the average of some given variables.

Figure 5. displays the B.Y.O screen.

mean

Name for the B.Y.O Example DataSet: quick_example

How Many Variables for your Named Dataset: 2

Which Data Orientation do you want: DOWN

Name your variable/ variables below

example_variable_1: example_variable_2:

Input the same # of data for all variables. Separate the data with a comma. I.E.: 1,2,3,4 OR yes, no

10,12,14: 14,16,19

categorize R variable(s)

Create Example

SAS R STATA

Copy the example Save as .txt file

```
data quick_example;
input example_variable_1 example_variable_2 ;
datalines;
10 14
12 16
14 19
;
proc means data=quick_example mean;
var example_variable_1 example_variable_2;
```

Figure 6. Screen of Build Your Own Example Tool

Image displaying the results from the B.Y.O. Example Process based on the user's input

CONCLUSION

The purpose in creating YAGI was to reduce the learning curve associated with new users learning SAS. We expect that the YAGI software will become a very useful tool in the training of newcomers to statistical programming and data manipulation. We envision that, once complete, the program will get adopted by research programs and universities across the entire country.

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Steph-Yves Louis
University of South Carolina
slouis@email.sc.edu
statisticalyagi.com/shop