User Guide for Breaking CAPTCHAS:

Making CAPTCHAS:
To produce a CAPTCHA, run the Make_Captcha.m script.
Directly in the figure hit the save button and save as a tiff file.

>Example: run and save as Example_Captcha_1.tif

Description: Make_Captcha.m is a matlab file that creates a captcha similar to the one used by the Holiday Inn Priority Club. Just simply run the file and it generates a random string of 5 letters in a captcha then follow the saving features described above.

Breaking Existing CAPTCHAS:
Run the Break_Captcha function with the filename of the example CAPTCHA as the only argument.

>Example: Break_Captcha('Example_Captcha_1.tif')
>The output is a message box with the determined string.
>Example Output: 08694

Description: Break_Captcha a function where the input is a .tif file created by Make_Captcha. Through a series of procedures, this function will output a dialog box with the string that the function has determined to be present in the Captcha.

Backend Functions:
find_best_match(character_blur, character_bank):
>Called on every isolated character from the Break_Captcha function.
>Returns the 'closeness' of the isolated character to each character in the bank.

>Description: find_best_match is a function that inputs an 8x8 matrix (which is the blur portion of a 64x64 matrix after 3 haar iterations), and computes the "closeness" to each character in the character_bank as the other input argument. Our character blurs come from Character_Bank.csv for this particular project, which are length 64 row vectors.

Make_Captcha_Letters
>Used to make tiff files for the individual characters making up the bank
>These outputs are stored in the folder Characters_58_font.

>Description: Make_Captcha_Letters creates individual captcha letters for our particular style of Captcha

Process_CAPTCHA_Letters
Used to calculate the blur of tiff files produced by Make_Captcha_Letters.
These output csv files for blur portion. Files stored in Characters_58font_3iterations.

> Description: Process_CAPTCHA_Letters is a file that processes a captcha letter created by Make_Captcha_Letters.m. The output of this file is the blur portion of our matrix in a csv file. The Image Plots have been commented out to improve efficiency. We use these csv files to create our character bank, however we concatenated the rows for ease of storage

Process_CAPTCHA
Nonfunction version of Break_Captcha. This file contains intermediate plots used to troubleshoot and develop code, but is practically superceded by Break_CAPTCHA.