How-To file

# for program:

Machine\_Screener\_ver4

# Setup with Python

The program runs a Python script which requires that Python3 is installed on your machine. This can be downloaded for free from [https://www.python.org/downloads/].

# Input data

The program needs as an input a .csv file that contains a column of abstract IDs, a column of abstract texts, a column of gold-standard human tags, and a column of gold-standard human assignments (“IN” or “EX”). There can be other columns present in the file, these will be ignored. The top row of the file should contain headings not data, as this row is discarded during processing.

To save an Excel file as csv, navigate to the sheet of interest using the tabs along the bottom. Click File, Save As, then from the drop-down menu select "CSV (Comma delimited)(\*.csv)". Give the file a name (e.g. YourFile.csv) and click Save.

YourFile.csv must be saved or moved into the same folder as the "Machine\_Screener\_ver4" file. Please copy the Machine\_Screener\_ver4 file into your own folder, and delete it after use.

# Running the program

## Input data, testing for duplicate abstracts

Right click on Machine\_Screener\_ver4, select Open With and then Python. The black command line box should appear and prompt you to enter the name of your training csv file, followed by the columns in which the ID numbers, abstract text, gold-standard screening tags, and gold-standard assignments can be found.

The program will then perform a quick check for duplicate abstracts and will display any duplicate pairs that it finds. This will not include abstract entries that are empty. You can then select whether to continue with the program.

The program will then check within the duplicates it has found for any duplicates that have conflicting human tags. It will display any pairs that it finds. Again you can then select whether to continue the program.

The program will then prompt for a testing csv file. Enter the details for the same csv file again (you can enter details for a different file with a different set of abstracts if you want tag suggestions, but the output is not ideal for this usage in its current form).

The program will again flag up any duplicates and give you the option to continue.

Finally the program will prompt you for the minimum number of articles you want returned for review. Enter an integer and hit ENTER.

## Checking tags and assignments

The program will then check whether the tag assignments are consistent, and will flag up if they are not. For example, if the tag “BACKGROUND” has been assigned as “IN” sometimes and “EX” at other times then this will be flagged and will have to be corrected before continuing.

## Calculating recommended tags and IN-EX assingments

The program should then run all the way through, taking between 30 seconds and 5 minutes. It will create an output csv file in the same folder with a string of numbers followed by “output.csv”.

This file will contain 8 columns: the ID list, the abstract text, the input human gold-standard screening tags, the input human gold-standard IN-EX assignments, three columns with the suggested tags from two different methods, and a column suggesting which articles to review. The output articles will be in the same order as the input, and so the machine tags can be copied straight into your original Excel file for comparison.

The program finds articles for review in two stages:

1. It looks for any articles that have an tag that corresponds to an INCLUDE assignment.
2. If it has not found as many articles as the user has request it will then include articles based on probability values until that minimum number has been reached.

# Troubleshooting

If the program is given data it cannot handle it should flag this up before it quits.

There is some kind of bug where when opening the program it opens, asks for input data, and then immediately closes without an output. I don’t know why this occurs, but there is a way around it.

* Right click on the program, click ‘open with’, ‘choose another app’, then select ‘python’ and tick ‘always use this app to open .py files’.
* The program will run, and close at the same point as before.
* However, now if you double-click on the program back in the folder it should run properly.