UCS538 – Data Science Fundamentals

Assignment06 - TOPSIS

- **Dead Line:** 13 Nov 2020 | 23:59:59
- **Submission Link:** bit.ly/ucs538-assignment06
- **Submission Guidelines:** You need to submit -
    1. One python (.py) file for Program 1 [**Required**]
    2. Web link of python package for TOPSIS on pypi.org for Program 2 [**Required**]
    3. Web link for Program 3 [**Optional**]
- Input data files are available in "**Input files for Assignment06**" folder
- **Note:** Multiple submissions are allowed, but **latest submission** will be considered for the evaluation.

Program 1: Develop a command line program to implement the TOPSIS.

Input File

Model	Corr	Rseq	RMSE	Accuracy
M1	0.79	0.62	1.25	60.89
M2	0.66	0.44	2.89	63.07
M3	0.56	0.31	1.57	62.87
M4	0.82	0.67	2.68	70.19
M5	0.75	0.56	1.3	80.39

Output File

Model	Corr	Rseq	RMSE	Accuracy	Topsis Score	Rank
M1	0.79	0.62	1.25	60.89	0.55	5
M2	0.66	0.44	2.89	63.07	0.87	1
M3	0.56	0.31	1.57	62.87	0.6	4
M4	0.82	0.67	2.68	70.19	0.79	2
M5	0.75	0.56	1.3	80.39	0.66	3

1.1 Learn the mathematics of Topsis | Link1 Link2

1.2 Input/Output Files:

- **Input File**
    - Input file contain three or more columns
    - First column is the object/variable name (e.g. M1, M2, M3, M4…...)
    - From 2nd to last columns contain **numeric values only**
- **Output Files**
    - **Result file** contains all the columns of input file and two additional columns having **TOPSIS SCORE and RANK**

1.2 Run the program through command line as:

Usages:

python topsis.py <InputDataFile> <Weights> <Impacts> <ResultFileName>

Example:

python topsis.py inputfile.csv "1,1,1,2" "+,+,-,+" result.csv

1.3 Check for:

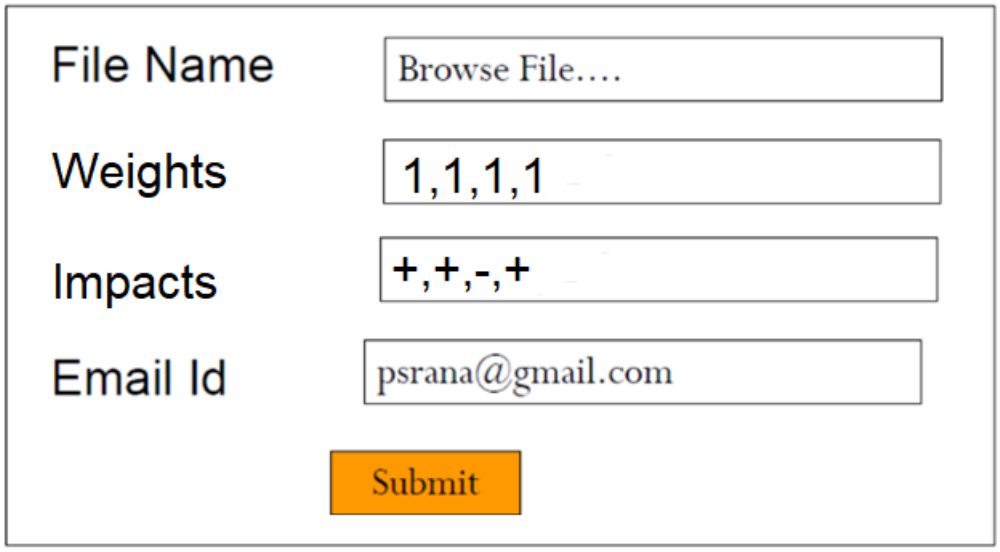
- Correct number of parameters (inputFileName, Weights, Impacts, resultFileName).
- Show the appropriate message for wrong inputs.

- Handling of “File not Found” exception
- Input file must contain three or more columns.
- From 2nd to last columns must contain numeric values only (Handling of non-numeric values)
- Number of weights, number of impacts and number of columns (from 2nd to last columns) must be same.
- Impacts must be either +ve or -ve.
- Impacts and weights must be separated by ‘,’ (comma).

Program 2: Develop a python package and upload it to the pypi.org (**Required**).

- **Naming convention for the package – “TOPSIS-FirstName-RollNumber”**
  - Example: TOPSIS-Shyam-10155792
- **Click Here to learn “How to upload your python package to PyPi”.**
- **Learn how to create python package using Youtube (or any other available resources).**
- **User Manual must be provided**
- **Test the package by installing it and run it through command line.**
- **Make any other assumption if required**

Program 3: Develop a web service for TOPSIS (**Optional**).



3.1 User should provide input file, weights, impacts and email id.
3.2 User should get the result file through email.
3.3 Number of weights must be equal to number of impacts
3.4 Impacts must be either +ve or -ve.
3.5 Impacts and weights must be separated by ‘,’ (comma).
3.6 Email id must be correct