

Step 1: At first, put the following files in one specific directory (Figure 1):

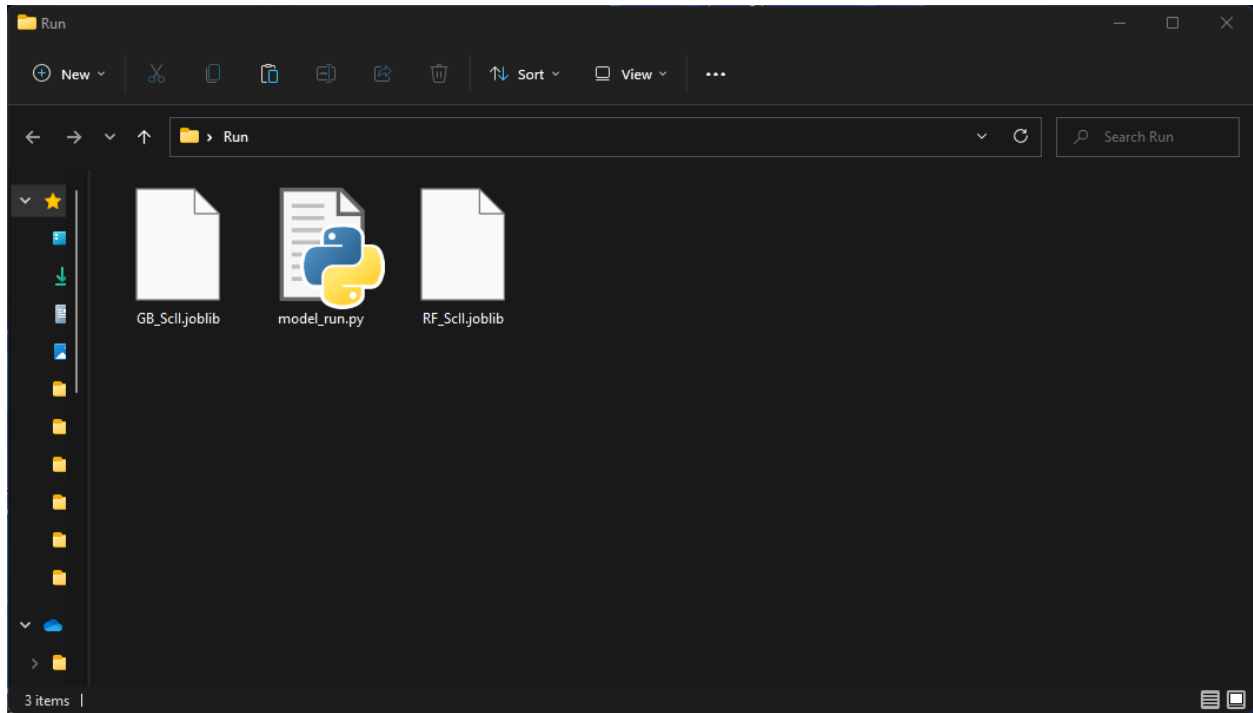


Figure 1: Step1

Step 2: Make sure that you have installed the following libraries in your environment¹:

1. Numpy
2. Pandas
3. Sklearn

Step 3: Run the *model_run.py* file; the following options will appear (Figure 2):

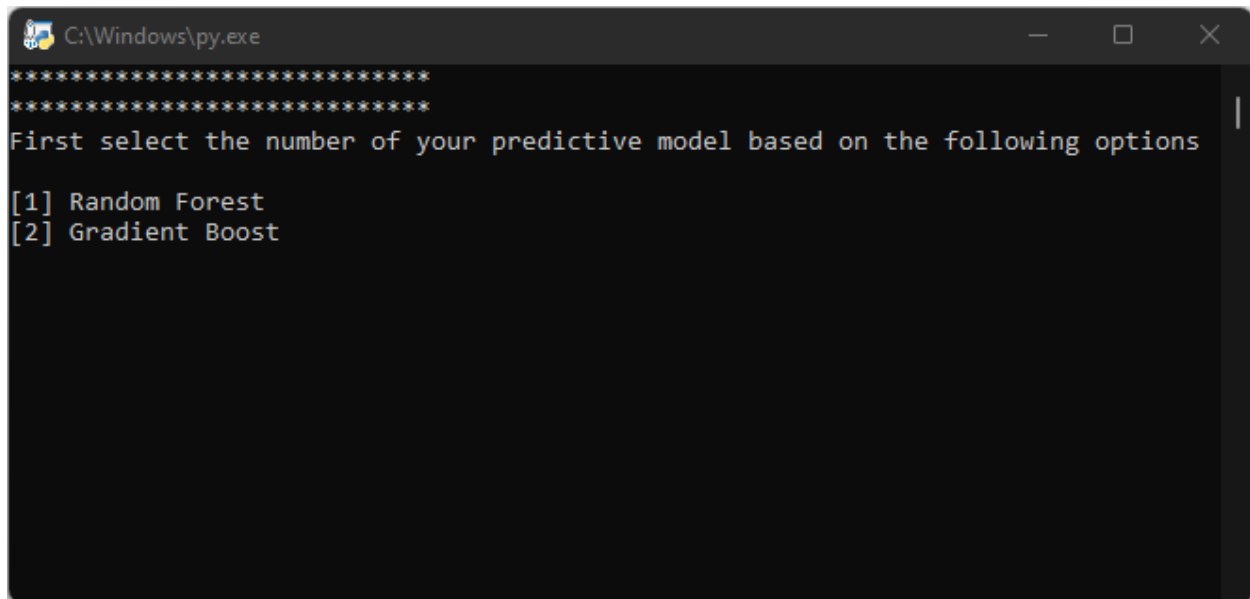
Figure 2: Step 2, predictive models

Step 4: Select one of the proposed models by writing the number of the model:

For example, write: *1* and then press *Enter* for running the Random Forest model:

[1] Random Forest

¹ Required libraries can be installed with pip install method, click [here](#) for more information



```
C:\Windows\py.exe
*****
*****
First select the number of your predictive model based on the following options
[1] Random Forest
[2] Gradient Boost
```

Figure 3. select your predictive model

Step 5: enter the required inputs in this order: X_b , X_c , R_j , H_{column}/d , L_{beam}/d and separate them with space according to Figure 4. For example, if you want to evaluate a BCJ with the following properties:

Cracking index= 1.58

Crushing index= 0.0

Joint aspect ratio= 0.73

$H_{column}/d = 7.14$

$L_{beam}/d = 9.2$

You must enter: 1.58 0.0 0.73 7.14 9.2

And then press the *Enter* bottom

```
C:\Windows\py.exe
*****
*****
First select the number of your predictive model based on the following options
[1] Random Forest
[2] Gradient Boost
1
*****
*****
Enter elements of a list separated by space with this order:
[(X_l),(X_c),(Rj),(Hcolumn/d),(Lbeam/d)
For example:
1.58    0.0    0.73    7.14    9.2
1.58    0.0    0.73    7.14    9.2
```

Figure 4. Enter the required inputs

The output of the model will be shown as depicted in Figure 5.

```
C:\Windows\py.exe
For example:
1.58    0.0    0.73    7.14    9.2
1.58    0.0    0.73    7.14    9.2

list: ['1.58', '0.0', '0.73', '7.14', '9.2']
*****
Predicted Drift Based On RandomForest Model in the second Scenario is:
***
**
*
drift= 1.78 %
*
**
***
*****
Press Enter bottom
```

Figure 5. Output of the model