Test_Pcorrelation

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An Introduction to the Pcorrelation program

I. Introduction

Correlation is one of the most popular methods to detect the linear relation between two features. One might have difficulty to find a strong correlation because of high data dimensionality. To this end, I developed a program, namely: Pcorrelation. Several vital outcomes are produced by using this program, such as

1. seek a number of attributes that have a correlation of over specific threshold.
2. List names of attributes that have a correlation of over specific threshold.
3. Show pair of attributes that have a correlation of over specific threshold.
4. Visualize the correlation matrix

II. A simple illustration

This program is particularly useful for the data with very high dimensionality. A dataset with a small number of features might not be needed. However, for simplicity, I use the data on candy competition (12 features). The dataset is available at the two links below

https://github.com/phuongvnguyen/Pfeature-Selection/blob/master/candy-data.csv

https://github.com/fivethirtyeight/data/tree/master/candy-power-ranking

Thus, the program below is an excellent example of showing the usefulness of my Pcorrelation program.

1 Checking the working directory

[1]:
```
import os
os.getcwd()
```

[1]:
```
'/Users/phuong/Dropbox/Machine Learning/My Python Functions'
```

[2]:
```
#os.chdir("C:\\Users\\Phuong_1\Dropbox\Machine␣
 ↪Learning\\Lidl\\candy-power-ranking") # Window format
os.chdir("/Users/phuong/Dropbox/Machine Learning/Lidl/candy-power-ranking") #␣
 ↪Mac iOS format
#print(Bold + Blue + 'Your current working directory is:' + End)
print(os.getcwd())
```

```
/Users/phuong/Dropbox/Machine Learning/Lidl/candy-power-ranking
```

2 Loading the dataset

[3]:
```
import pandas as pd
candy_data=pd.read_csv('candy-data.csv')
print(candy_data.head(3))
print(candy_data.shape)
```

```
  competitorname  chocolate  fruity  caramel  peanutyalmondy  nougat  \
0      100 Grand          1       0        1               0       0
1   3 Musketeers          1       0        0               0       1
2       One dime          0       0        0               0       0

   crispedricewafer  hard  bar  pluribus  sugarpercent  pricepercent  \
0                 1     0    1         0         0.732         0.860
1                 0     0    1         0         0.604         0.511
2                 0     0    0         0         0.011         0.116

   winpercent
0   66.971725
1   67.602936
2   32.261086
(85, 13)
```

[4]:
```
os.chdir("/Users/phuong/Dropbox/Machine Learning/My Python Functions")
```

[5]:
```
print(os.getcwd())
```

```
/Users/phuong/Dropbox/Machine Learning/My Python Functions
```

3 Calling the program

Please make sure, the python file "Pcorrelation" is located in your current working directory. Otherwise, the codes below can not be implemented.

[6]:
```
from Pcorrelation_Alone import Pcorrelation
```

[7]:
```
# check
Pcorrelation
```

[7]: <function Pcorrelation_Alone.Pcorrelation(data, threshold, figsizes)>

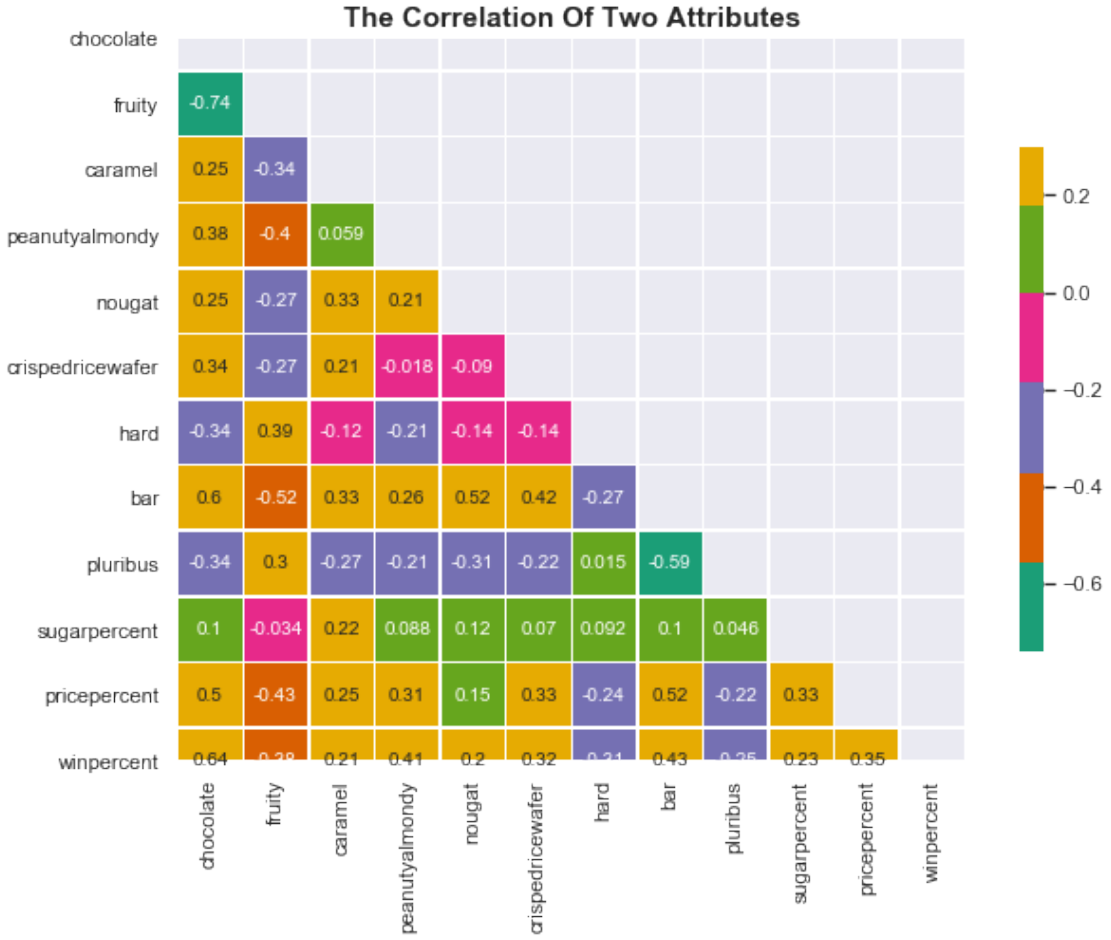
4 Fitting data

[9]:
```
corr_result=Pcorrelation(data=candy_data.iloc[:,1:13],
                         threshold=0.3,
                         figsizes=(10,7))
```

```
------------------------------------------------------------------
This program was developed by Phuong Van Nguyen
------------------------------------------------------------------
The number of the attributes has the higher-threshold correlation: 10
------------------------------------------------------------------
The list of the attributes has the higher-threshold correlation:
['fruity', 'caramel', 'peanutyalmondy', 'nougat', 'crispedricewafer', 'hard',
'bar', 'pluribus', 'pricepercent', 'winpercent']
------------------------------------------------------------------
------------------------------------------------------------------
Recording the higher-threshold correlations:
------------------------------------------------------------------
```

	Attribute_1	Attribute_2	Correlation_Value
0	chocolate	fruity	-0.741721
1	fruity	caramel	-0.335485
2	chocolate	peanutyalmondy	0.377824
3	fruity	peanutyalmondy	-0.399280
4	caramel	nougat	0.328493
5	chocolate	crispedricewafer	0.341210
6	chocolate	hard	-0.344177
7	fruity	hard	0.390678
8	chocolate	bar	0.597421
9	fruity	bar	-0.515066
10	caramel	bar	0.333960
11	nougat	bar	0.522976
12	crispedricewafer	bar	0.423751
13	chocolate	pluribus	-0.339675
14	nougat	pluribus	-0.310339
15	bar	pluribus	-0.593409
16	chocolate	pricepercent	0.504675
17	fruity	pricepercent	-0.430969
18	peanutyalmondy	pricepercent	0.309153
19	crispedricewafer	pricepercent	0.328265
20	bar	pricepercent	0.518407
21	sugarpercent	pricepercent	0.329706
22	chocolate	winpercent	0.636517
23	fruity	winpercent	-0.380938
24	peanutyalmondy	winpercent	0.406192

```
25  crispedricewafer        winpercent           0.324680
26              hard        winpercent          -0.310382
27               bar        winpercent           0.429929
28      pricepercent        winpercent           0.345325
------------------------------The End----------------------
```



Thank you for reading my code

Any comments are warmly welcome at phuong.nguyen@summer.barcelonagse.eu