Course Policies

1. List the communication channels available to you in this course.

1. email

2. Canvas mail

3. Slack

2. Are late assignments acceptable?

It should be accepted if a student is not able to submit it due to some emergency and he/she communicates it before the deadline.

3. What to do if you feel that an assignment needs to be re-graded?

I will reach out to Jackson Cornell and will try to understand his point of view. If I am not satisfied with the answer, I will connect with Dr. Catia Silva for a better understanding of it.

4. What constitutes healthy collaboration and when to cite another student?

According to me, healthy collaboration is to be able to recognize the work done by each individual without any biases. Citation of others' work is necessary If I am using the work of others as a reference and building or something on it.

5. If you have additional comments, please feel free to add them as well.

My submission for this assignment is because I switched to this course on August 30th night. Even though the fault is on my end, I hope you can be a bit lenient in the late submission penalty.

Assignment 0

In [1]:

```
!pip install sklearn
```

```
Defaulting to user installation because normal site-packages is not wri
teable
Requirement already satisfied: sklearn in /home/dipali.patidar/.local/l
ib/python3.8/site-packages (0.0)
Requirement already satisfied: scikit-learn in /home/dipali.patidar/.lo
cal/lib/python3.8/site-packages (from sklearn) (1.1.2)
Requirement already satisfied: scipy>=1.3.2 in /apps/jupyterhub/1.1.0/l
ib/python3.8/site-packages (from scikit-learn->sklearn) (1.6.3)
Requirement already satisfied: joblib>=1.0.0 in /apps/jupyterhub/1.1.0/
lib/python3.8/site-packages (from scikit-learn->sklearn) (1.0.1)
Requirement already satisfied: threadpoolctl>=2.0.0 in /home/dipali.pat
idar/.local/lib/python3.8/site-packages (from scikit-learn->sklearn)
(3.1.0)
Requirement already satisfied: numpy>=1.17.3 in /apps/jupyterhub/1.1.0/
lib/python3.8/site-packages (from scikit-learn->sklearn) (1.20.2)
```

In [2]:

```
%matplotlib inline
import numpy as np
import pandas as pd
from sklearn.preprocessing import MinMaxScaler
from scipy import stats

import matplotlib.pyplot as plt
plt.style.use('seaborn-whitegrid')
```

UF Dataset

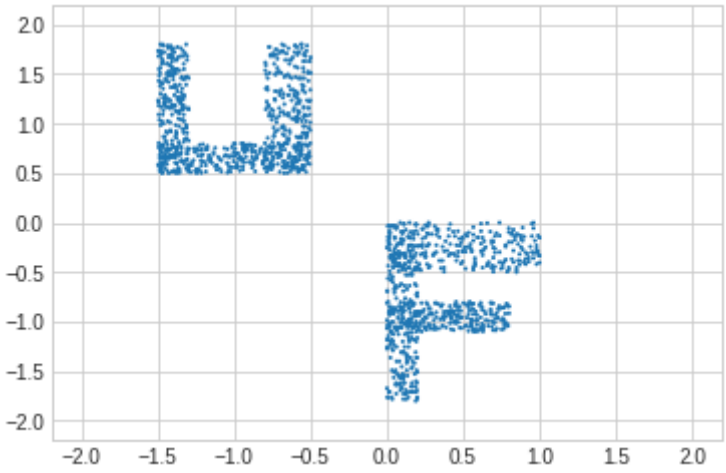
In [3]:

```
UF_data = np.load('UF_data.npy')
#print(UF_data)
feature_1= UF_data[:, 0]
feature_2 = UF_data[:,1]

#colors=feature_2
target = UF_data[:,2]

plt.scatter(feature_1, feature_2,s=target, cmap='viridis')

plt.show()
```



Computer Hardware Dataset

In [4]:

```
df = pd.read_csv('computer_hardware.csv')
```

In [5]:

```
df.head()
```

Out[5]:

	MYCT	MMIN	MMAX	CACH	CHMIN	CHMAX	RP
0	125	256	6000	256	16	128	198
1	29	8000	32000	32	8	32	269
2	29	8000	32000	32	8	32	220
3	29	8000	32000	32	8	32	172
4	29	8000	16000	32	8	16	132

In [6]:

```
scaler = MinMaxScaler()
df[df.columns]= scaler.fit_transform(df)
df.head()
```

Out[6]:

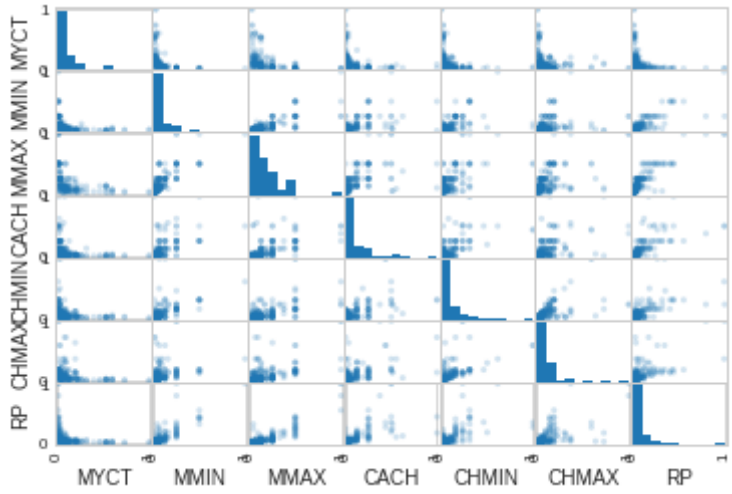
	MYCT	MMIN	MMAX	CACH	CHMIN	CHMAX	RP
0	0.072825	0.006012	0.092843	1.000	0.307692	0.727273	0.167832
1	0.008092	0.248497	0.499499	0.125	0.153846	0.181818	0.229895
2	0.008092	0.248497	0.499499	0.125	0.153846	0.181818	0.187063
3	0.008092	0.248497	0.499499	0.125	0.153846	0.181818	0.145105
4	0.008092	0.248497	0.249249	0.125	0.153846	0.090909	0.110140

In [7]:

```
pd.plotting.scatter_matrix(df, alpha=0.2)
```

Out[7]:

```
array([[<AxesSubplot:xlabel='MYCT', ylabel='MYCT'>,
        <AxesSubplot:xlabel='MMIN', ylabel='MYCT'>,
        <AxesSubplot:xlabel='MMAX', ylabel='MYCT'>,
        <AxesSubplot:xlabel='CACH', ylabel='MYCT'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='MYCT'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='MYCT'>,
        <AxesSubplot:xlabel='RP', ylabel='MYCT'>],
       [<AxesSubplot:xlabel='MYCT', ylabel='MMIN'>,
        <AxesSubplot:xlabel='MMIN', ylabel='MMIN'>,
        <AxesSubplot:xlabel='MMAX', ylabel='MMIN'>,
        <AxesSubplot:xlabel='CACH', ylabel='MMIN'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='MMIN'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='MMIN'>,
        <AxesSubplot:xlabel='RP', ylabel='MMIN'>],
       [<AxesSubplot:xlabel='MYCT', ylabel='MMAX'>,
        <AxesSubplot:xlabel='MMIN', ylabel='MMAX'>,
        <AxesSubplot:xlabel='MMAX', ylabel='MMAX'>,
        <AxesSubplot:xlabel='CACH', ylabel='MMAX'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='MMAX'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='MMAX'>,
        <AxesSubplot:xlabel='RP', ylabel='MMAX'>],
       [<AxesSubplot:xlabel='MYCT', ylabel='CACH'>,
        <AxesSubplot:xlabel='MMIN', ylabel='CACH'>,
        <AxesSubplot:xlabel='MMAX', ylabel='CACH'>,
        <AxesSubplot:xlabel='CACH', ylabel='CACH'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='CACH'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='CACH'>,
        <AxesSubplot:xlabel='RP', ylabel='CACH'>],
       [<AxesSubplot:xlabel='MYCT', ylabel='CHMIN'>,
        <AxesSubplot:xlabel='MMIN', ylabel='CHMIN'>,
        <AxesSubplot:xlabel='MMAX', ylabel='CHMIN'>,
        <AxesSubplot:xlabel='CACH', ylabel='CHMIN'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='CHMIN'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='CHMIN'>,
        <AxesSubplot:xlabel='RP', ylabel='CHMIN'>],
       [<AxesSubplot:xlabel='MYCT', ylabel='CHMAX'>,
        <AxesSubplot:xlabel='MMIN', ylabel='CHMAX'>,
        <AxesSubplot:xlabel='MMAX', ylabel='CHMAX'>,
        <AxesSubplot:xlabel='CACH', ylabel='CHMAX'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='CHMAX'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='CHMAX'>,
        <AxesSubplot:xlabel='RP', ylabel='CHMAX'>],
       [<AxesSubplot:xlabel='MYCT', ylabel='RP'>,
        <AxesSubplot:xlabel='MMIN', ylabel='RP'>,
        <AxesSubplot:xlabel='MMAX', ylabel='RP'>,
        <AxesSubplot:xlabel='CACH', ylabel='RP'>,
        <AxesSubplot:xlabel='CHMIN', ylabel='RP'>,
        <AxesSubplot:xlabel='CHMAX', ylabel='RP'>,
        <AxesSubplot:xlabel='RP', ylabel='RP'>]], dtype=object)
```



In [8]:

```
df.corr(method='pearson')
```

Out[8]:

	MYCT	MMIN	MMAX	CACH	CHMIN	CHMAX	RP
MYCT	1.000000	-0.335642	-0.378561	-0.321000	-0.301090	-0.250502	-0.307099
MMIN	-0.335642	1.000000	0.758157	0.534729	0.517189	0.266907	0.794931
MMAX	-0.378561	0.758157	1.000000	0.537990	0.560513	0.527246	0.863004
CACH	-0.321000	0.534729	0.537990	1.000000	0.582245	0.487846	0.662641
CHMIN	-0.301090	0.517189	0.560513	0.582245	1.000000	0.548281	0.608903
CHMAX	-0.250502	0.266907	0.527246	0.487846	0.548281	1.000000	0.605209
RP	-0.307099	0.794931	0.863004	0.662641	0.608903	0.605209	1.000000

MMAX has the largest predictive value to predict the dependent variable

In [9]:

```
x=df['MMAX']
y = df['RP']
slope, intercept, r, p, se = stats.linregress(x, y)
print("slope is:",slope)
print("intercept is:",intercept)
```

```
slope is: 0.6615010812649373
intercept is: -0.03430220768472374
```

In [10]:

```
plt.plot(x, y, 'o', label='original data')
plt.plot(x, intercept + slope*x, 'r', label='fitted line')
plt.xlabel("MMAX")
plt.ylabel("RP")
plt.legend()
plt.show()
```