```
import pandas as pd
import numpy as np
from sklearn import model_selection
from sklearn.linear_model import LinearRegression
from sklearn.linear_model import Ridge
from sklearn.linear_model import Lasso
from sklearn.linear_model import ElasticNet
from sklearn.neighbors import KNeighborsRegressor
from sklearn.tree import DecisionTreeRegressor
from sklearn.svm import SVR
from sklearn.ensemble import RandomForestRegressor
from sklearn.metrics import r2_score
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_squared_error
from math import sqrt
```

```
df = pd.read_csv('/content/modis_2020_Wildfire_history.csv')
print(df.shape)
df.describe()
```

```
(155524, 15)
```

	latitude	longitude	brightness	scan	track	acq_time	15
count	155524.000000	155524.000000	155524.000000	155524.000000	155524.000000	155524.000000	
mean	-22.994165	138.725172	331.658396	1.581639	1.201152	621.549812	
std	9.368269	10.193191	23.970144	0.794561	0.244202	532.996444	
min	-43.500600	113.734200	300.000000	1.000000	1.000000	0.000000	
25%	-32.666525	131.031200	317.500000	1.000000	1.000000	328.000000	
50%	-19.406150	142.049450	327.100000	1.200000	1.100000	436.000000	
75%	-14.417400	148.191700	339.100000	1.800000	1.300000	640.000000	
max	-9.274100	153.551500	507.000000	4.800000	2.000000	2359.000000	

```
target_column = ['brightness']
predictors = list(set(list(df.columns))-(set(target_column)))
y = str(predictors[0])
df[predictors] = (df[y]/df[y]).max()
df.describe()
```

	latitude	longitude	brightness	scan	track	acq_date	acq_time	satellite	ins
count	155524.0	155524.0	155524.0	155524.000000	155524.0	155524.0	155524.0	155524.0	
mean	1.0	1.0	1.0	1.581639	1.0	1.0	1.0	1.0	
std	0.0	0.0	0.0	0.794561	0.0	0.0	0.0	0.0	
min	1.0	1.0	1.0	1.000000	1.0	1.0	1.0	1.0	
25%	1.0	1.0	1.0	1.000000	1.0	1.0	1.0	1.0	
50%	1.0	1.0	1.0	1.200000	1.0	1.0	1.0	1.0	
75%	1.0	1.0	1.0	1.800000	1.0	1.0	1.0	1.0	

```
X = df[predictors].values
y = df[target_column].values

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.30, random_state=40)
print(X_train.shape); print(X_test.shape)
```

```
(108866, 14)
(46658, 14)
```

```
rr = Ridge(alpha=0.01)
rr.fit(X_train, y_train)
pred_train_rr= rr.predict(X_train)
print(np.sqrt(mean_squared_error(y_train,pred_train_rr)))
print(r2_score(y_train, pred_train_rr))

pred_test_rr= rr.predict(X_test)
print(np.sqrt(mean_squared_error(y_test,pred_test_rr)))
print(r2_score(y_test, pred_test_rr))
```

```
0.7933698422827749
0.0
0.7973245689788258
-1.0297643202594742e-05
```

```
model_lasso = Lasso(alpha=0.01)
model_lasso.fit(X_train, y_train)
pred_train_lasso= model_lasso.predict(X_train)
print(np.sqrt(mean_squared_error(y_train,pred_train_lasso)))
print(r2_score(y_train, pred_train_lasso))

pred_test_lasso= model_lasso.predict(X_test)
print(np.sqrt(mean_squared_error(y_test,pred_test_lasso)))
print(r2_score(y_test, pred_test_lasso))
```

```
0.7933698422827749
0.0
0.7973245689788258
-1.0297643202594742e-05
```

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
import warnings
warnings.simplefilter("ignore")
```

```
df = pd.read_csv('/content/modis_2020_Australia.csv')
print(df.shape)
df.describe()
```

```
(155524, 15)
```

	latitude	longitude	brightness	scan	track	acq_time	1
count	155524.000000	155524.000000	155524.000000	155524.000000	155524.000000	155524.000000	
mean	-22.994165	138.725172	331.658396	1.581639	1.201152	621.549812	
std	9.368269	10.193191	23.970144	0.794561	0.244202	532.996444	
min	-43.500600	113.734200	300.000000	1.000000	1.000000	0.000000	
25%	-32.666525	131.031200	317.500000	1.000000	1.000000	328.000000	
50%	-19.406150	142.049450	327.100000	1.200000	1.100000	436.000000	
75%	-14.417400	148.191700	339.100000	1.800000	1.300000	640.000000	
max	-9.274100	153.551500	507.000000	4.800000	2.000000	2359.000000	

```
print("[Temperature,pressure,Wind_speed,Humidity,latitude,longitude,Wind_bearing,brightness,frp,Confide
```

```
[Temperature,pressure,Wind_speed,Humidity,latitude,longitude,Wind_bearing,brightness,frp,Confiden
```