CODEDANIEL

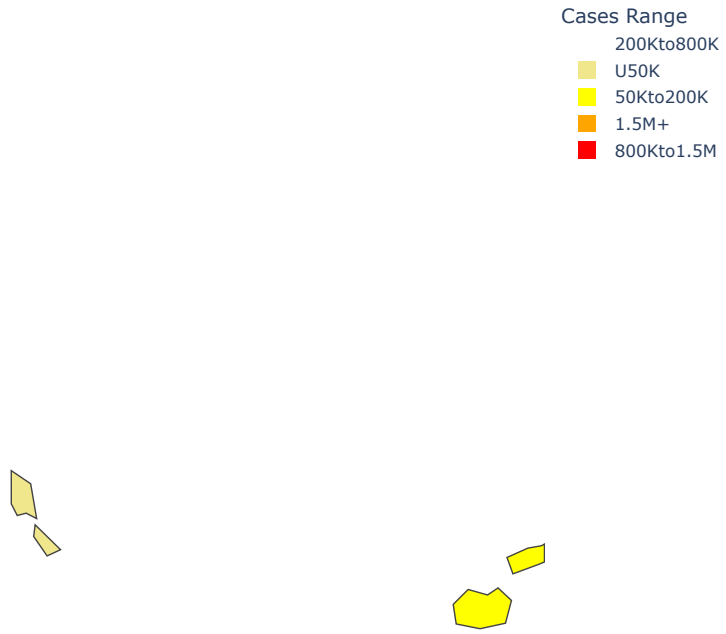
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import plotly.express as px
from sklearn.preprocessing import MinMaxScaler
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import LSTM, Dense
from sklearn.metrics import r2_score

plt.style.use("ggplot")


df0 = pd.read_csv("CONVENIENT_global_confirmed_cases.csv")
df1 = pd.read_csv("CONVENIENT_global_deaths.csv")
```

DATA PREPRATION

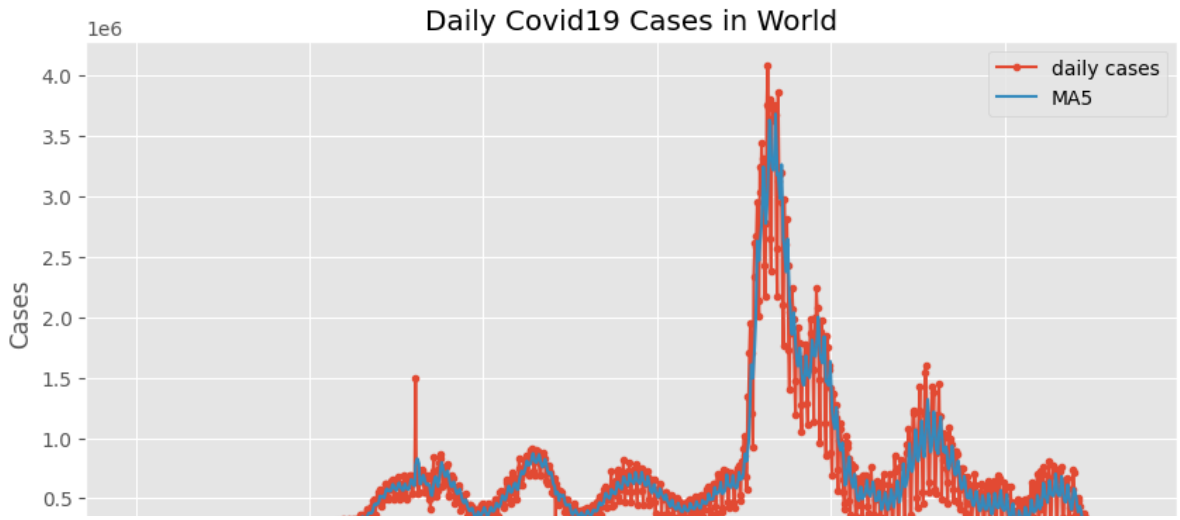
```
world = pd.DataFrame({"Country":[],"Cases":[]})
world["Country"] = df0.iloc[:,1:].columns
cases = []
for i in world["Country"]:
    cases.append(pd.to_numeric(df0[i][1:]).sum())
world["Cases"]=cases

country_list=list(world["Country"].values)
idx = 0
for i in country_list:
    sayac = 0
    for j in i:
        if j==".":
            i = i[:sayac]
            country_list[idx]=i
        elif j=="(":
            i = i[:sayac-1]
            country_list[idx]=i
        else:
            sayac += 1
    idx += 1
world["Country"]=country_list
world = world.groupby("Country")["Cases"].sum().reset_index()
world.head()
continent=pd.read_csv("continents2.csv")
continent["name"]=continent["name"].str.upper()
```

DATA VISULIZATION

```
world["Cases Range"]=pd.cut(world["Cases"],[-150000,50000,200000,800000,1500000,15000000],labels=["U50K","50Kto200K","2
alpha =[]
for i in world["Country"].str.upper().values:
    if i == "BRUNEI":
        i="BRUNEI DARUSSALAM"
    elif  i=="US":
        i="UNITED STATES"
    if len(continent[continent["name"]==i]["alpha-3"].values)==0:
        alpha.append(np.nan)
    else:
        alpha.append(continent[continent["name"]==i]["alpha-3"].values[0])
world["Alpha3"]=alpha

fig = px.choropleth(world.dropna(),
                    locations="Alpha3",
                    color="Cases Range",
                     projection="mercator",
                     color_discrete_sequence=["white","khaki","yellow","orange","red"])
fig.update_geos(fitbounds="locations", visible=False)
fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
```

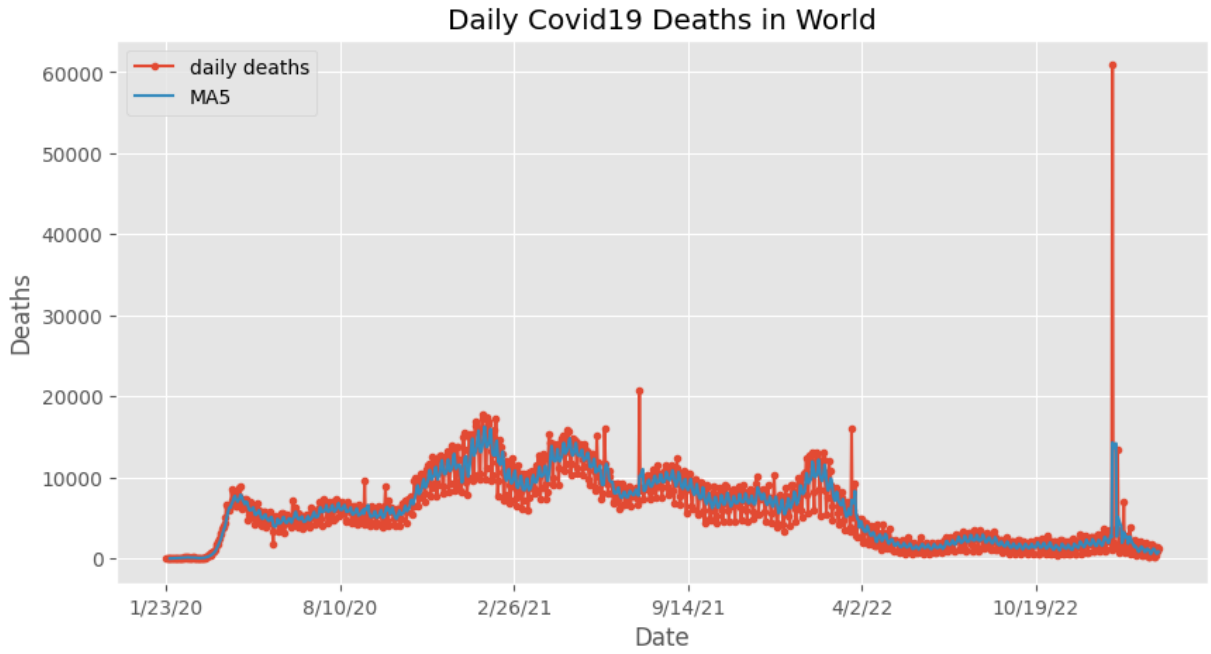



```
count = []
for i in range(1,len(df0)):
    count.append(sum(pd.to_numeric(df0.iloc[i,1:].values)))

df = pd.DataFrame()
df["Date"] = df0["Country/Region"][1:]
df["Cases"] = count
df=df.set_index("Date")

count = []
for i in range(1,len(df1)):
    count.append(sum(pd.to_numeric(df1.iloc[i,1:].values)))

df["Deaths"] = count

df.Cases.plot(title="Daily Covid19 Cases in World",marker=".",figsize=(10,5),label="daily cases")
df.Cases.rolling(window=5).mean().plot(figsize=(10,5),label="MA5")
plt.ylabel("Cases")
plt.legend()
plt.show()
```



Daily Death Cases of Covid-19:

```
df.Deaths.plot(title="Daily Covid19 Deaths in World",marker=".",figsize=(10,5),label="daily deaths")
df.Deaths.rolling(window=5).mean().plot(figsize=(10,5),label="MA5")
plt.ylabel("Deaths")
plt.legend()
plt.show()
```




```
class Fbprophet(object):
    def fit(self,data):

        self.data  = data
        self.model = Prophet(weekly_seasonality=True,daily_seasonality=False,yearly_seasonality=False)
        self.model.fit(self.data)

    def forecast(self,periods,freq):

        self.future = self.model.make_future_dataframe(periods=periods,freq=freq)
        self.df_forecast = self.model.predict(self.future)

    def plot(self,xlabel="Years",ylabel="Values"):

        self.model.plot(self.df_forecast,xlabel=xlabel,ylabel=ylabel,figsize=(9,4))
        self.model.plot_components(self.df_forecast,figsize=(9,6))

    def R2(self):
        return r2_score(self.data.y, self.df_forecast.yhat[:len(df)])

df_fb  = pd.DataFrame({"ds":[],"y":[]})
df_fb["ds"] = pd.to_datetime(df.index)
```

```
df_fb["y"]  = df.iloc[:,0].values

model = Fbprophet()
model.fit(df_fb)
model.forecast(30,"D")
model.R2()

forecast = model.df_forecast[["ds","yhat_lower","yhat_upper","yhat"]].tail(30).reset_index().set_index("ds").drop("inde
forecast["yhat"].plot(marker=".",figsize=(10,5))
plt.fill_between(x=forecast.index, y1=forecast["yhat_lower"], y2=forecast["yhat_upper"],color="gray")
plt.legend(["forecast","Bound"],loc="upper left")
plt.title("Forecasting of Next 30 Days Cases")
plt.show()
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-13-836ccd968556> in <cell line: 26>()
     24
     25 model = Fbprophet()
---> 26 model.fit(df_fb)
     27 model.forecast(30,"D")
     28 model.R2()

<ipython-input-13-836ccd968556> in fit(self, data)
      3
      4         self.data  = data
----> 5         self.model = Prophet(weekly_seasonality=True,daily_seasonality=False,yearly_seasonality=False)
      6         self.model.fit(self.data)
      7

NameError: name 'Prophet' is not defined
```

SEARCH STACK OVERFLOW

```
# Prepare the data
df_fb = pd.DataFrame({"ds": [], "y": []})
df_fb["ds"] = pd.to_datetime(df.index)
df_fb["y"] = df.iloc[:, 0].values

# Scale the data
scaler = MinMaxScaler(feature_range=(0, 1))
scaled_data = scaler.fit_transform(df_fb["y"].values.reshape(-1, 1))

# Split the data into training and testing sets
train_size = int(len(scaled_data) * 0.8)
train_data = scaled_data[:train_size]
test_data = scaled_data[train_size:]

# Function to create LSTM dataset
def create_lstm_dataset(data, window_size):
    X, y = [], []
    for i in range(len(data) - window_size):
        X.append(data[i:i+window_size])
        y.append(data[i+window_size])
    return np.array(X), np.array(y)

# Set window size and create training dataset
window_size = 7
X_train, y_train = create_lstm_dataset(train_data, window_size)

# Reshape input data for LSTM model
X_train = np.reshape(X_train, (X_train.shape[0], X_train.shape[1], 1))

# Build the LSTM model
model = Sequential()
model.add(LSTM(64, activation='relu', input_shape=(window_size, 1)))
model.add(Dense(1))
model.compile(optimizer='adam', loss='mean_squared_error')

# Train the model
model.fit(X_train, y_train, epochs=50, batch_size=32)

# Create testing dataset
X_test, y_test = create_lstm_dataset(test_data, window_size)

# Reshape input data for LSTM model
X_test = np.reshape(X_test, (X_test.shape[0], X_test.shape[1], 1))
```

```
# Make predictions
y_pred = model.predict(X_test)

# Inverse transform the predictions
y_pred = scaler.inverse_transform(y_pred)

# Plot the forecasted values
forecast_dates = df_fb["ds"].values[train_size+window_size:]
forecast = pd.DataFrame({"ds": forecast_dates, "yhat": y_pred.flatten()})
forecast.set_index("ds", inplace=True)

forecast["yhat"].plot(marker=".", figsize=(10, 5))
plt.fill_between(x=forecast.index, y1=forecast["yhat"], y2=forecast["yhat"], color="gray")
plt.legend(["forecast"], loc="upper left")
plt.title("Forecasting of Next 30 Days Cases")
plt.show()
```