

Scipy:

We have the min and max temperatures in a city In India for each months of the year.

We would like to find a function to describe this and show it graphically, the dataset given below.

- Task:
- 1.fitting it to the periodic function
 - 2.plot the fit

Data

Max = 39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25

Min = 21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18

```
In [3]: import numpy as np
import matplotlib.pyplot as plt
from scipy import optimize

temp_max = np.array([39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25])
temp_min = np.array([21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18])

months = np.arange(12)

#defining periodic function
def yearly_temps(times, avg, ampl, time_offset):
    return (avg + ampl * np.cos((times + time_offset) * 1.8 * np.pi / times.max()))

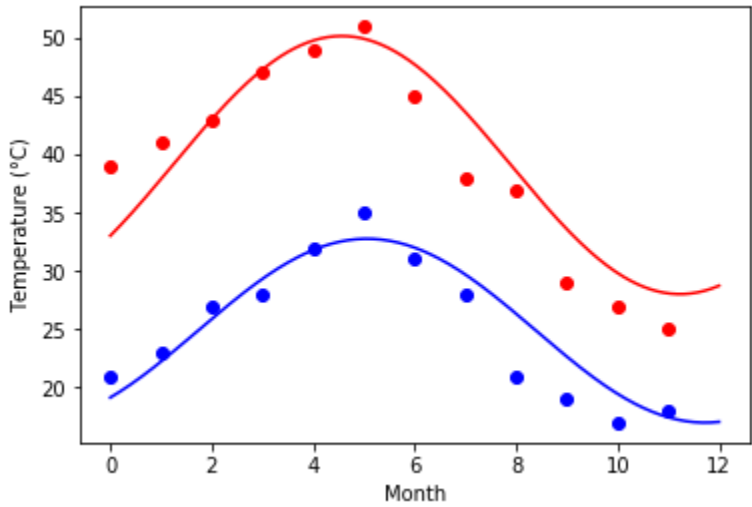
#identifying the curve for plot using scipy

res_max, cov_max = optimize.curve_fit(yearly_temps, months,temp_max, [40, 20, 0])
res_min, cov_min = optimize.curve_fit(yearly_temps, months,temp_min, [-40, 20, 0])
print(res_max)
print(res_min)

#2. plot the fit

days = np.linspace(0, 12, num=365)
plt.figure()
plt.plot(months,temp_max, 'ro')
plt.plot(days, yearly_temps(days, *res_max), 'r-')
plt.plot(months,temp_min, 'bo')
plt.plot(days, yearly_temps(days, *res_min), 'b-')
plt.xlabel('Month')
plt.ylabel('Temperature (°C)')
plt.show()
```

[39.10062829 -11.08724928 2.10332481]
[24.87112259 -7.8989966 1.60673367]



Matplotlib:

This assignment is for visualization using matplotlib:

data to use:

url=https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-Data/master/titanic_original.csv

titanic = pd.read_csv(url)

- Charts to plot:
- 1. Create a pie chart presenting the male/female proportion

```
In [4]: import pandas as pd
import matplotlib.pyplot as plt

url = r'https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-Data/master/titanic_original.csv'

titanic = pd.read_csv(url,skip_blank_lines=True)
```

```
In [15]: count=titanic['sex'].value_counts()

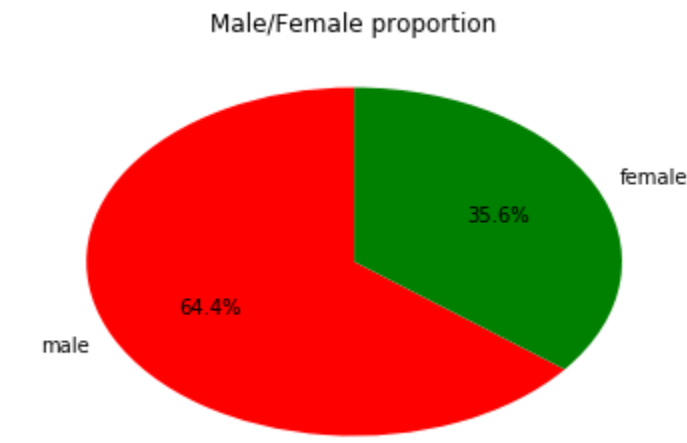
colors = ['red', 'green']

plt.pie(count.values.tolist(), labels=count.index.values.tolist(), colors=colors,startangle=90,autopct='%1.1f%%')

plt.title("Male/Female proportion")

plt.show
```

Out[15]: <function matplotlib.pyplot.show>



- 2.Create a scatterplot with the Fare paid and the Age, differ the plot color by gender

```
In [16]: colors = {'male':'red', 'female':'green'}

plt.scatter(titanic.fare,titanic.age,c=titanic['sex'].iloc[:-1].apply(lambda x: colors[x]))

plt.xlabel('Fare')

plt.ylabel('Age')

plt.title("Fare paid and the Age")

plt.show
```

Out[16]: <function matplotlib.pyplot.show>

