Digitized Plotter

October 28, 2019

1 Homework 7 - Q1

We're going to plot some data from a CSV file that was obtained by digitization of this image taken from [1], using WebPlotDigitizer.

We're using matplotlib to plot the graph, and pandas to load the csv file into a python-compatible data structure, called DataFrame.

```
[1]: import pandas as pd
     import matplotlib.pyplot as plt
     import numpy as np
```

The below DataFrame, df, will hold the data in the CSV file…

```
[2]: df = pd.read_csv("Digitized_Dataset.csv")
```

…until we extract its columns into two lists, x and y.

```
[3]: x = df.iloc[:,0].tolist()
     y = df.iloc[:,1].tolist()
```

Now, the MatPlotLib Magic!

(I've simply used the numpy `arange()` function, as I wanted to learn to make a range with float increments in Python)

The idea is that the complete plot will be a close replica of the original image. Hence, we start with plotting the data in the CSV file. The second plot has a – linestyle, which means it will be a dashed line.

Next we add the two plots we've generated so that they get plotted in the same graph, and not as two separate graphs.

We want the plot to be limited to the range of the original plot, hence, we use the `plt.axis()` command, which specifies the x and y ranges.

Now, for the last part: Axis Labels and Graph Title!

`plt.xlabel()`, `plt.ylabel()`, and `plt.title()` take care of those for us, so yay! We've finished creating our plot!

```
[4]: r = plt.plot(x,y,label = "Regenerated from CSV")
     s = plt.plot(np.arange(0,1.1,0.1),np.arange(0,1.1,0.1), linestyle = '--')
     z = r+s
     plt.axis([0,1.05,0,1.05])
     plt.xlabel("Specificity")
     plt.ylabel("Sensitivity")
     plt.title("Regenerated Data from CSV generated from WebPlotDigitizer")
```
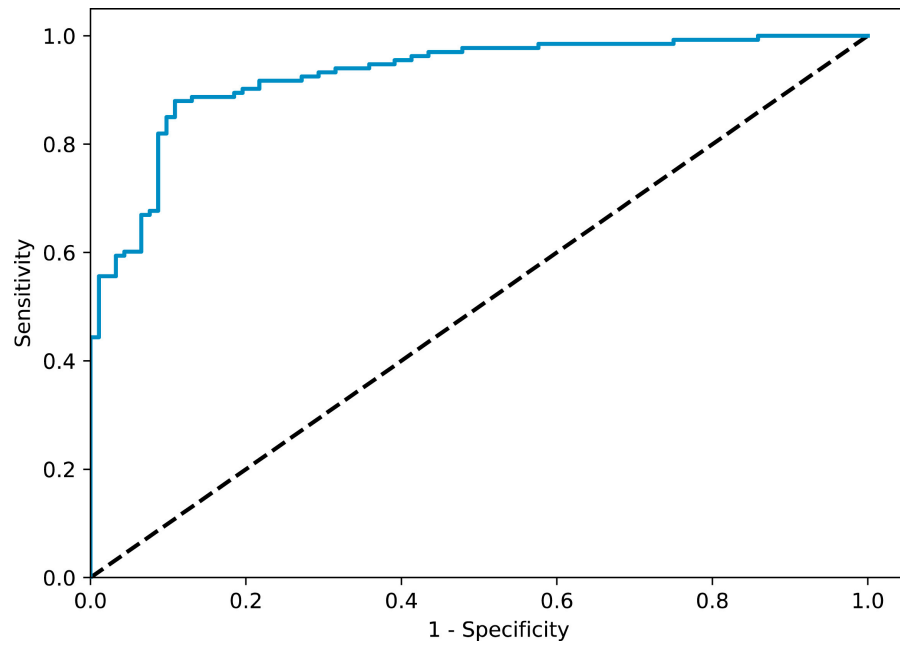
[4]: Text(0.5, 1.0, 'Regenerated Data from CSV generated from WebPlotDigitizer')
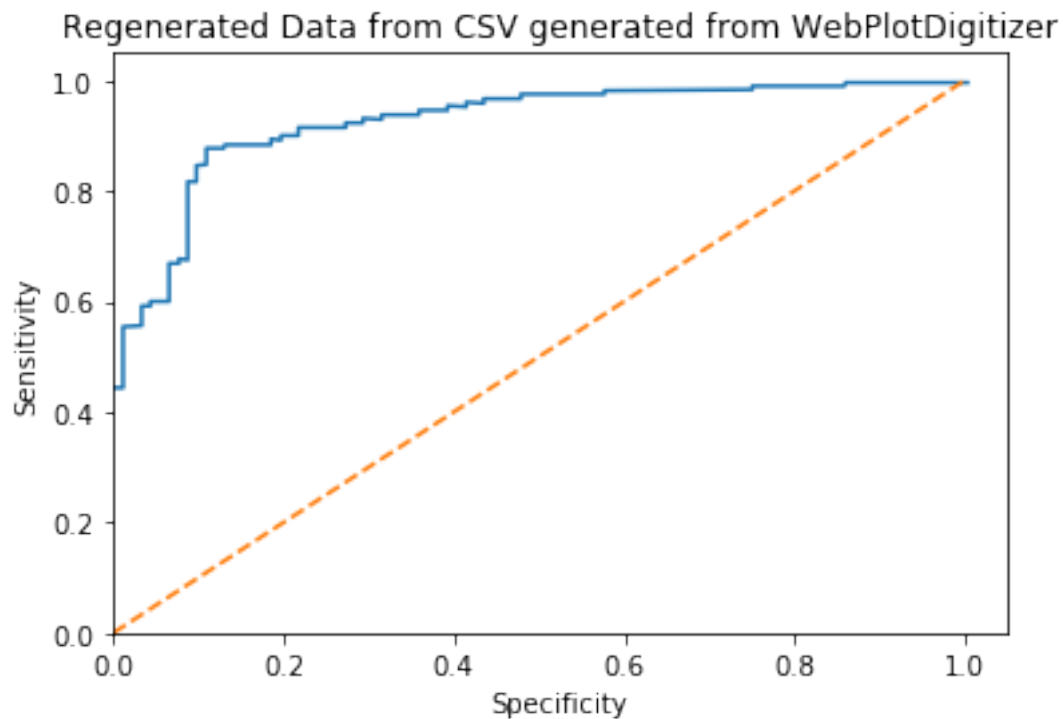
Now the original image is also given below for reference.

```
[5]: from IPython.display import Image
     Image(filename='Line_plot.jpg')
```

[5]:

[1]: Hekler, Achim, et al. ``Superior skin cancer classification by the combination of human and artificial intelligence.'' European Journal of Cancer 120 (2019): 114-121.