Sian’s questions from class – I will attempt to answer any questions from class here that I needed to look into afterwards

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| Date | Lesson | Your question (as I understand it!) | Response including useful resources |
| 20-10-20 | Intro to Pandas | *If we are bringing two files to our data frame, with the same headers but they are in different orders, what will happen?* | My assumption on this would be that pandas/python would do the heavy lifting of matching column names for us… that has proven to be true in a couple of different variations I have tried. So as long as the column headers are the same strings, ie not lowercase /uppercase mismatched, or typos, the concat will stack the data under the appropriate columns regardless of the incoming order. If there are some new columns – eg in one file, not in another, those are added at the end of the column list. Which is quite logical too. So, no worries there  The other thing I noticed is that the order of the columns on the output is obedient to the order of the columns in the first file listed in the concat cell.  Here is a really nice tip for working with frames with lots of columns – reorder the ones that matter! https://stackoverflow.com/questions/41968732/set-order-of-columns-in-pandas-dataframe |
| 20-10-20 | Intro to Pandas | *Why do we need to say axis =0 or axis =1 … what difference does it make ?*  *Examples*  **data = pd.concat([data,file1], axis=0)**  **data = data.drop(['tcode'], axis =1)** | Ambiguity in Pandas Dataframe / Numpy Array "axis" definition - Stack  Overflow  A data frame in pandas looks like the image above. Axis 1 and 0 is pre defined. In our example concat, we want to create long thin data, like append the rows to the existing frame – hence referring to axis =0 (axis = index/rows)  In our drop example we want to search along the column headers and apply a drop, ie following axis =1. (axis = columns)  We are specifying the axis along which we compute the function.  Useful resource for where we are now and gives a hint of where this is going to come up later on :  <https://railsware.com/blog/python-for-machine-learning-pandas-axis-explained/> |
| 21.10.20 | Using seaborn and matplotlib | What are the black lines on the top of the bars in the seaborn barplot ? | I found a couple of great articles for you on this – and you may be glad to know that you aren’t the only one who asked!  <https://stackoverflow.com/questions/35193996/what-is-the-overlay-line-on-each-bar-in-a-bar-chart>  … they are vertical error bars  -“ Error bars are a graphical representation of the variability of data and are used on graphs to indicate the error, or uncertainty in a reported measurement.”  The confidence interval – 95% in our case is calculated for you based on the number of data points and diversity. Its worth understanding what it means :  The "95%" says that 95% of experiments like we just did will include the true mean, but **5% won't**.So there is a 1-in-20 chance (5%) that our Confidence Interval does NOT include the true mean.  You can modify what the error bars show – eg standard deviation, add caps to make it more obvious that’s whats showing  <https://seaborn.pydata.org/generated/seaborn.barplot.html>  You can also turn them off <https://stackoverflow.com/questions/40088585/turn-off-error-bars-in-seaborn-bar-plot> |
|  |  | How do you turn a boxplot horizontal with matplotlib? | Simple answer which we should have guessed! Just define inside the () your requirement that this is not vertical… as that’s default, we use vertical =False  **Data[[‘actual\_height’]].boxplot(vert=False)**  **Before :**    **After :** |
| 22.10 | Review | Things we want to revisit :   * Environments (Brecht/Andres) * Github merging branches * Useful python commands for processing data | TA will cover in labs in unit 2  Will cover in class in unit 2/3 as I have invited one of the Tas from web dev to guest lecture  I have added the screenshot to the class repo under Notes |
|  | Review | New things we want to see/do   * Unstructured data - cleaning and sentiment analysis * GitKraken * Talk about the ethics and moral aspects of ML | We will start introducing this from unit 2 onwards but under review how to cover it in more depth  We will start during unit 2  Definitely unit 7, if not before |
|  | Review | Why am I seeing this error with github?  *“remote: This repository moved. Please use the new location”* | You just need to update the origin with the updated url – this has happened because you shifted your repos around in github  From command line you can run  Git remote set-url origin <updated url>  https://stackoverflow.com/questions/30443333/error-with-renamed-repo-in-github-remote-this-repository-moved-please-use-th |
|  | Seaborn /Matplot lib | Is there a way to plot inline two different charts for the same dataset? | Yes, you will need to define the subplots in your query  I found an example online :  import seaborn as sns  import pandas as pd  import matplotlib.pyplot as plt  batData = ['a','b','c','a','c']  bowlData = ['b','a','d','d','a']  df=pd.DataFrame()  df['batting']=batData  df['bowling']=bowlData  fig, ax =plt.subplots(1,2)  sns.countplot(df['batting'], ax=ax[0])  sns.countplot(df['bowling'], ax=ax[1])  fig.show()  an alternative approach :  import matplotlib.pyplot as plt  l=['batting\_team', 'bowling\_team']  figure, axes = plt.subplots(1, 2)  index = 0  for axis in axes:  sns.countplot(high\_scores[index])  index = index+1  plt.show() |
|  | Seaborn /Matplot lib | Is there an easy way to plot a pie chart ? | <https://matplotlib.org/3.1.1/gallery/pie_and_polar_charts/pie_features.html>  this link contains some examples you can walk through : <https://matplotlib.org/3.1.1/api/_as_gen/matplotlib.pyplot.pie.html>  and I like this one has a section on legends  <https://pythonspot.com/matplotlib-pie-chart/> |
|  | Seaborn /Matplot lib | How can we find out the X intercept of a linear model ? | This one is hard to track down  You can try this approach  slope, intercept = np.polyfit(x, y, 1)  Where x is your x value list  This solution seems more sophisticated but much more in depth – one to try yourselves.  <https://www.includehelp.com/python/find-the-x-intercept-and-y-intercept-of-a-line-passing-through-the-given-point.aspx> |
| 23.10 | Pre processing | Can we get a process diagram for the steps involved in the ML workflow? | Its not pictographic but I like this one <https://towardsdatascience.com/a-data-science-workflow-26c3f05a010e>  Before we revisit machine learning I will take the time to draw our planned steps with lucidchart, as I think it would be useful for future students to accompany the case studies we will work on  I found this on https://github.com/glc12125/Machine-Learning-Workflow-with-Python    And I thought this one was helpful for the non machine learning view of the world  Data Preprocessing and Workflow of a Machine Learning Project | by Rishabh  Mall | Medium |
|  | Pre processing | How can we flatten a 2d array into a 1d array? | We should be able to employ **numpy.ndarray.flatten**  There are a few alternative approaches here  <https://www.geeksforgeeks.org/python-ways-to-flatten-a-2d-list/>  and this very colourful example of multi dimensional array reshaping  <https://towardsdatascience.com/reshaping-numpy-arrays-in-python-a-step-by-step-pictorial-tutorial-aed5f471cf0b> |
| 26.10 | Basic sql | How can I display a random set of data in the preview/output from my query? | <https://www.mysqltutorial.org/select-random-records-database-table.aspx/>  **SELECT** \* **FROM** table\_name  **ORDER** **BY** **RAND**()  **LIMIT 20 ;**  A much more in depth answer here  <https://www.mssqltips.com/sqlservertip/6347/selecting-a-simple-random-sample-from-a-sql-server-database/> |
| 27.10 | Sql regex | How is REGEXP used in the ‘real world’ | Im not suggesting to do these examples but I think there are some familiar concepts on here, eg how to pull the HTML tag out of a url , password validation  <https://dev.to/oahehc/master-regular-expression-through-real-world-examples-3164>  for more info on regex and to try it – I recommend these links  <https://www.rexegg.com/regex-quickstart.html>  <https://en.wikipedia.org/wiki/Regular_expression> - sometimes wikipedia is useful!  <https://www.freeformatter.com/regex-tester.html> |
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