Assignment 4

Before working on this assignment please read these instructions fully. In the submission area, you will notice that you can click the link to **Preview the Grading** for each step of the assignment. This is the criteria that will be used for peer grading. Please familiarize yourself with the criteria before beginning the assignment.

This assignment requires that you find **at least two datasets** on the web which are related, and that you visualize these datasets to answer the assignment question. You are free to utilize datasets with any location or domain, the usage of **Ann Arbor sports and athletics** datasets in the example is just a suggestion.

You are welcome to choose datasets at your discretion, but keep in mind **they will be shared with your peers**, so choose appropriate datasets. Sensitive, confidential, illicit, and proprietary materials are not good choices for datasets for this assignment. You are welcome to upload datasets of your own as well, and link to them using a third party repository such as github, pastebin, etc. Please be aware of the Coursera terms of service with respect to intellectual property.

Also, you are welcome to preserve data in its original language, but for the purposes of grading you should provide english translations. You are welcome to provide multiple visuals in different languages if you would like!

As this assignment is for the whole course, you must incorporate principles discussed in the first week, such as having as high data-ink ratio (Tufte) and aligning with Cairo's principles of truth, beauty, function, and insight.

Here are the assignment instructions:

- You must state a question you are seeking to answer with your visualizations.
- You must provide at least two links to available datasets. These could be links to files such as CSV or Excel files, or links to websites which might have data in tabular form, such as Wikipedia pages.
- You must upload an image which addresses the research question you stated. In addition to addressing the question, this visual should follow Cairo's principles of truthfulness, functionality, beauty, and insightfulness.
- You must contribute a short (1-2 paragraph) written justification of how your visualization addresses your stated research question.

Tips

- Wikipedia is an excellent source of data, and I strongly encourage you to explore it for new data sources.
- Many governments run open data initiatives at the city, region, and country levels, and these are wonderful resources for localized data sources.
- Several international agencies, such as the United Nations (http://data.un.org/), the World Bank (http://data.worldbank.org/), the Global Open Data Index (http://index.okfn.org/place/) are other great places to look for data.
- This assignment requires you to convert and clean datafiles. Check out the discussion forums for tips on how to do this from various sources, and share your successes with your fellow students!

Example

Looking for an example? Here's what our course assistant put together as an example! Example Solution File (./readonly/Assignment4_example.pdf)

Objectives

Research questions

- To answer real-time generate data and function response, by using of sample input but application for AI, indicators and mesurements methods.
- To prove of the concept of real-time input data and integration paths of AI machine learning to generate output action responses, by implementing area.
- For codes managment and visualization practices.
- The proejct datasets are in the Dataset topics and have two list one is graph obstrucle generations data and actions perfrom by charater when there are frame_x and frame_y variables to save and tranfrom data from previous frames.
- This study is to solved about the random statisticsdistribution influence actions for multi-purposes. See attached pictures are explain about contrastive signals to create action from reverse or dramatically changed in values. `significant( t-2 - t-1 )`
- This visualization is followed the Cario's principle Trustfulness, functionalitiy, beautyful and insightfulness.

Region and the domain category

- study is to solved about the random statisticsdistribution influence actions for multi-purposes. See attached pictures are explain about contrastive signals to create action from reverse or dramatically changed in values. significant(t-2 - t-1)
- Dataset links are two real-time function generator 1. generate_data() and 2. listof_actions().

Load Libraries

In [1]:
```
%matplotlib widget

# We can bring in some other libraries we will need too, including the
# matplotlib animation module
import matplotlib.pyplot as plt
import matplotlib.animation as animation
import numpy as np

import matplotlib.image as image
import os;
from matplotlib.offsetbox import OffsetImage, AnnotationBbox;
```

Dataset and image generation

- Dataset by this project is environment variables and responsive actions 1. generate_data() and 2. listof_actions().

In [2]:
```
# images
#####################################################
bg_image = image.imread("/home/jovyan/work/assignments/course2_assignment4/64x
64 background.png");
image_offset_0 = OffsetImage(bg_image, zoom = 1.5)
image_1 = image.imread("/home/jovyan/work/assignments/course2_assignment4/samp
le.png");
image_offset_1 = OffsetImage(image_1, zoom = 1.5)
image_2 = image.imread("/home/jovyan/work/assignments/course2_assignment4/samp
le2.png");
image_offset_2 = OffsetImage(image_2, zoom = 1.5)
image_3 = image.imread("/home/jovyan/work/assignments/course2_assignment4/samp
le3.png");
image_offset_3 = OffsetImage(image_3, zoom = 1.5)
image_4 = image.imread("/home/jovyan/work/assignments/course2_assignment4/samp
le4.png");
image_offset_4 = OffsetImage(image_4, zoom = 1.5)
#####################################################

"""""""""""""""""""""""""""""""""""""""""""""""""""
: Variables
"""""""""""""""""""""""""""""""""""""""""""""""""""
n = 10000;
fig, ax = plt.subplots();
im = plt.imshow( bg_image )
# im = image_1.rotate(90)

global frames_x;
global frames_y;
frames_x = list(range(0,30,1));
frames_y = [0] * 30;

def generate_data():
    global frames_x;
    global frames_y;

    frames_y = frames_y + [np.argmax(np.random.randn(15))];
    frames_y = frames_y[-30:]

    return frames_x, frames_y;

def listof_actions():
    actions = ["Yayy~!", "Yeah~!", "Let go~!", "Shall we~!", "Holla~!"];
    answer = np.argmax(np.random.randn(len(actions)))
    return actions[answer];
```

Visualization

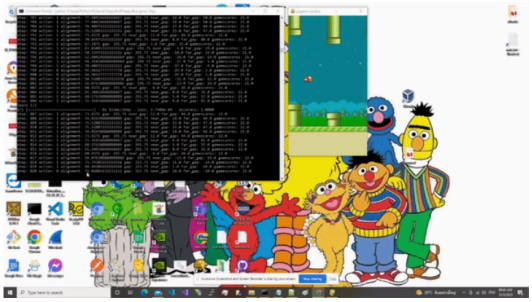
In [3]:
```
# n = 100;
# x = np.random.randn(n)

# create the function that will do the plotting, where curr is the current fra
me
def update( frame ):
    ax.cla();

    """"""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""
    : 👶💬 🎈 Implementation area / Integration area
    """"""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""
    frames_x, frames_y = generate_data()
    ax.bar(frames_x, frames_y)
    text = listof_actions();
    ax.annotate(text, xy=(frames_x[12], frames_y[12]), xytext=(frames_x[12] +
1, frames_y[12] + 8))
    ab = AnnotationBbox(image_offset_1, (frames_x[12], frames_y[12] + 3), fram
eon = False)
    ax.add_artist(ab);


    ax.axis([0,30,0,30])

    return
```

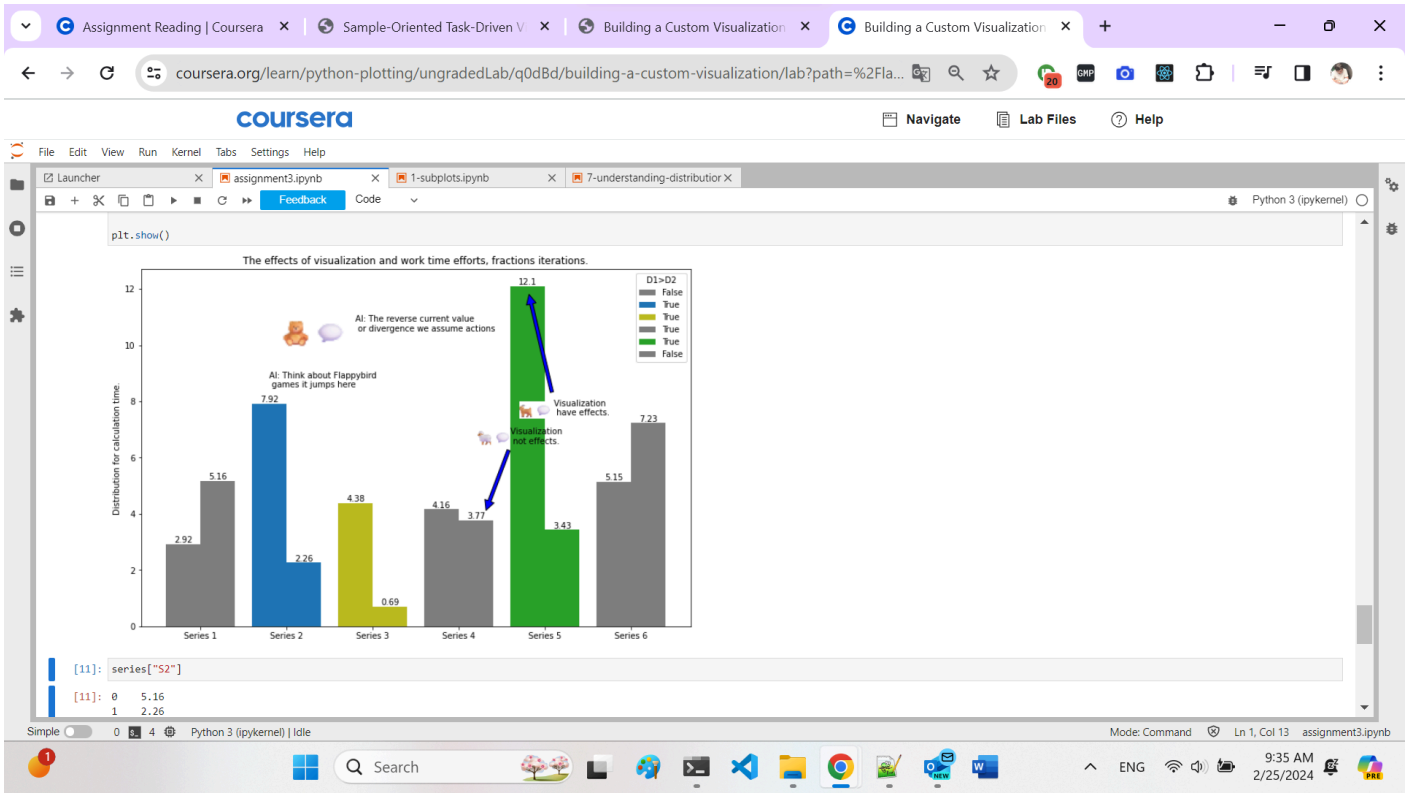
In [4]:
```
""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""
: Tasks
""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""""
# Quick to start
a = animation.FuncAnimation(plt.figure(), update, interval=100)

# Now tell the widget back end it's time to show!
plt.show()
```

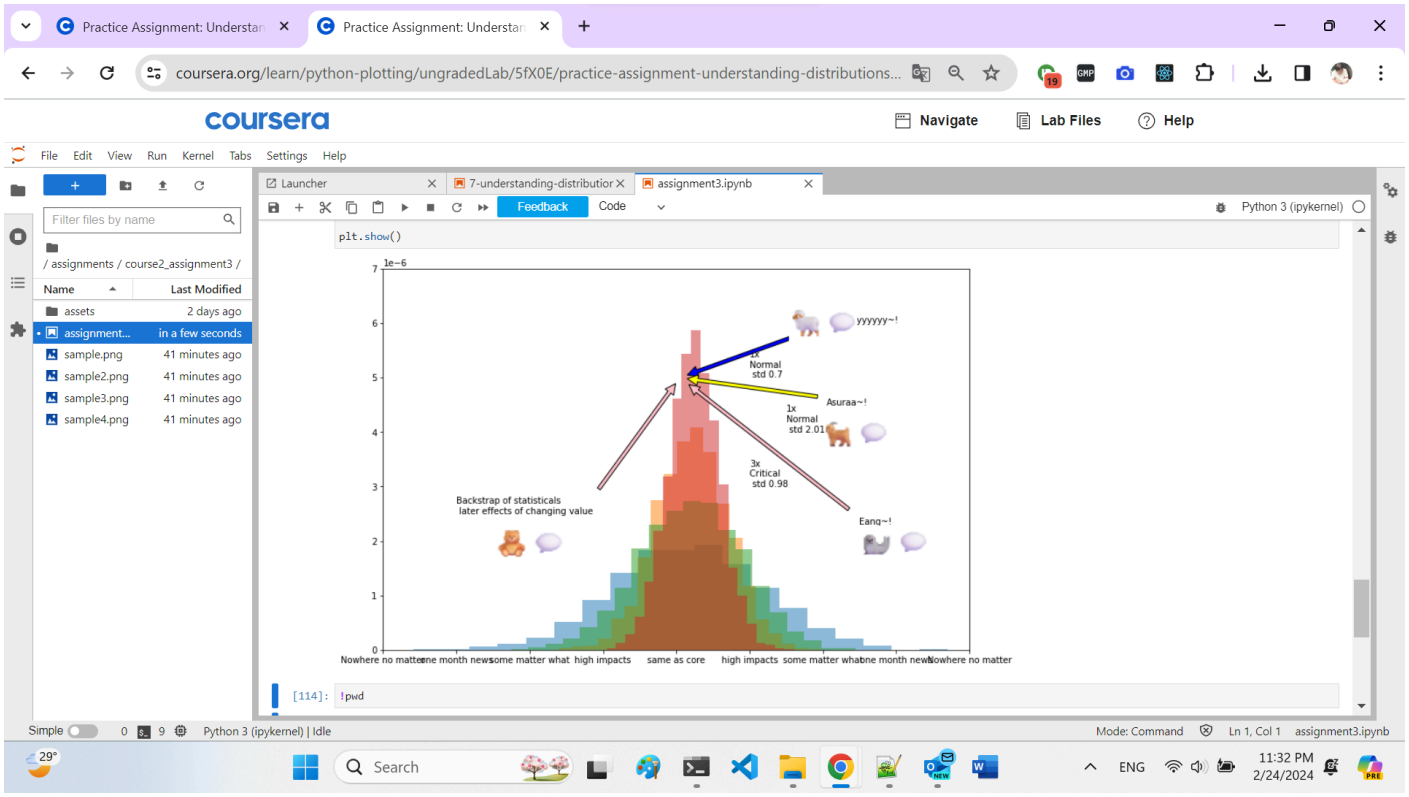
README

```
step: 000042 action: 8 coff_0: 000159 coff_1: 000125 coff_2: 000001 coff_3: 000001 coff_4: 000001 epsilon: False
step: 000043 action: 8 coff_0: 000141 coff_1: 000125 coff_2: 000001 coff_3: 000001 coff_4: 000001 epsilon: False
step: 000044 action: 8 coff_0: 000121 coff_1: 000125 coff_2: 000001 coff_3: 000001 coff_4: 000001 epsilon: False
step: 000045 action: 8 coff_0: 000101 coff_1: 000125 coff_2: 000001 coff_3: 000001 coff_4: 000001 epsilon: False
step: 000046 action: 8 coff_0: 000081 coff_1: 000125 coff_2: 000001 coff_3: 000001 coff_4: 000001 epsilon: False
step: 000047 action: 8 coff_0: 000061 coff_1: 000125 coff_2: 000001 coff_3: 000001 coff_4: 000001 epsilon: False
```

This Flappy birds game is good example because no sample action cheats and accuracy actions.



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Practice Assignment: Understan
coursera.org/learn/python-plotting/ungradedLab/5fX0E/practice-assignment-understanding-distributions...
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Code
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sample4.png 41 minutes ago
plt.show()
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std 0.7
Asuraa~!
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Normal
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Eanq~!
Nowhere no matter
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Simple
Python 3 (ipykernel) | Idle
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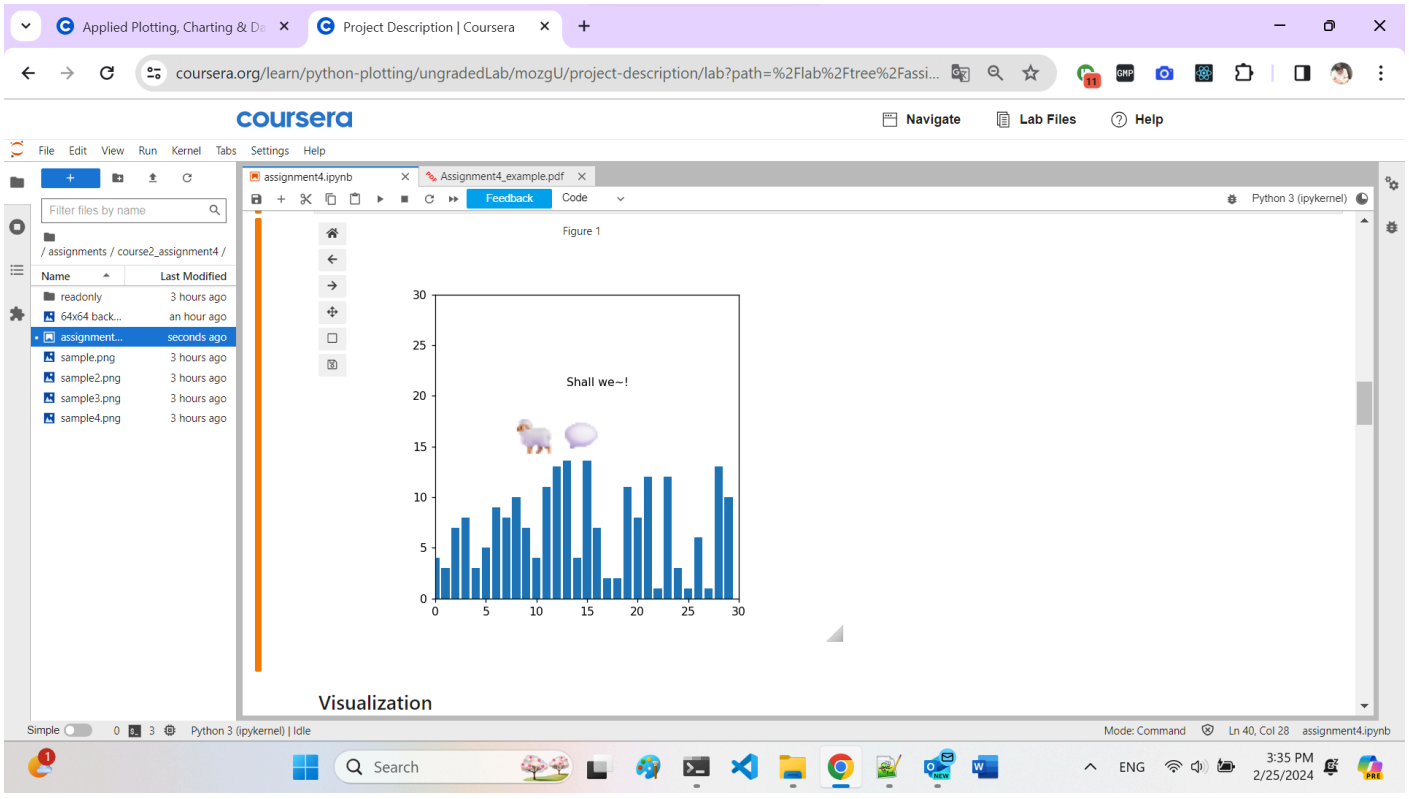
2/24/2024


Applied Plotting, Charting & Da
Project Description | Coursera
coursera.org/learn/python-plotting/ungradedLab/mozgU/project-description/lab?path=%2Flab%2Ftree%2Fassi...
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Navigate
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Help
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assignment4.ipynb
Assignment4_example.pdf
Feedback
Code
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readonly 3 hours ago
64x64 back... an hour ago
assignment... seconds ago
sample.png 3 hours ago
sample2.png 3 hours ago
sample3.png 3 hours ago
sample4.png 3 hours ago
Figure 1
Shall we~!
Visualization
Simple
Python 3 (ipykernel) | Idle
Mode: Command
Ln 40, Col 28
assignment4.ipynb
Search
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3:35 PM
2/25/2024

Discussion

It is possible and prefer to varies of actions response to partial information inputs from environment, sensors, measurement signals and communciation signals and create response actions according to program, logicals or highiest possibility by pre-functions or evaluation method. In this example is using maximum method that usually use in maximumlikelihood andindex categorizes problem solving.

There are list of actions and possibility from the random generation input as grpah, this study is to explain how the random distribution statistics can be response by neurons networks or simple mathametical evaluation methods. np.max(), np.min(), np.mean() and set_A - set_B.

Q1: Describe your design choices for your visual in regards to Cairo's principle of truthfulness.

- Response action are from environment no control sources and visulaization display it without applied rules but statistical records reflection only.

Q2: Describe your design choices for your visual in regards to Cairo's principle of beauty.

- To illustrate famous games Flappyboard the player can evade from playing stage obstrucles with rules and conditions but there is implementation area for integration.
- It is clean looking and neat with simplify of method display and charateristics of statistics responses.

Q3: Describe your design choices for your visual in regards to Cairo's principle of functionality.

- There are many of future integrations and useful with Python programming languages when real-time graph can feed image input arrays.

Q4: Describe your design choices for your visual in regards to Cairo's principle of insightfulness.

- Impementing of method to answer study research questions with work output make it functionality and visulizing data insight sample real-time data evaluation and display.

Questions

1. Did the chart created teach you something new about the city/region/country? What did you learn?

- I try to implement the real-time functionality with future imeplementation of AI machine learning for solving randomness responsives.

1. Do you think this chart answers an interesting question? Why?

- Yes, it may procide some ideas about randomness statistiscs and PyGame and real-world problem solving.

1. Name one thing which works and one which could be improved, and how would you improve it.

- The graph is really work and one thing is I need to practice more but this time need some efforts from friends since I am working on sufficient resources.

In [ ]: