LOOK FOR TP2 UPDATE BELOW!!!

Project Description [2.5 pts]:

Project Name: Social Distancing AI Application

Description: The purpose of my project is to determine whether people in public places are socially distanced using face recognition. Not only will I be able to calculate whether people are 6 ft apart from each other, I will webscrape live covid data in the city of the webcam to create a risk score (i.e. how likely covid will spread) for the people in that location.

Competitive Analysis [2.5 pts]:
Similar projects:

> Face mask recognition - detects if a person is wearing a mask
> https://www.pyimagesearch.com/2020/05/04/covid-19-face-mask-detector-with-opencv-keras
> -tensorflow-and-deep-learning/

> Social Distancing - detects distance between moving objects
> https://www.pyimagesearch.com/2020/06/01/opencv-social-distancing-detector/

In my project, I will be outputting whether people are socially distanced as well if they are wearing a mask. In pyimagesearch's SD project, It only highlights whether the person object is 6 ft apart, however, in my program, I will also be taking into consideration real-time covid data depending on the location of the webcam. This is useful because there is a variation in risk if two people are 4 feet apart in a city in Australia vs. New York Times Square. Since I will not be using the darkWeb Algorithm (as used above), I will be collecting live pictures of the webcam instead of processing live videos.

Structural Plan [2.5 pts]: A structural plan for how the finalized project will be organized in different functions, files and/or objects.

File #1: CovidData
- ➢ User chooses a city
- ➢ Webscrapes covid data from google
- ➢ Opens live webstream from that city
- ➢ Calculates number of people in the video stream
- ➢ Calculates distance between each person
- ➢ Based on people's behavior, mask/ no mask, covid data => creates a risk score

File #2: Distance between People
- ➢ ~~Take an image~~
- ➢ ~~Create a left-vision, right-vision of the image~~
- ➢ ~~Turns both images to grayscale~~
- ➢ ~~Uses stereo to create a disparity histogram~~

➤ ~~Uses stereo to create a disparity image~~
➤ ~~Compare the face coordinates from covidData to retrieve the gray coord~~
➤ ~~The lighter the gray, closer it is to the camera; darker the gray, farther away~~
➤ ~~Use disparity values to calculate the distance between each person~~

TP2 Update:

We will calculate the distance by using the "person's" center point. This point is parallel to the group therefore no need for depth calculation.

I will be creating covid data graphs. For every state, I will create a cumulative covid cases tracker based on data from the covid tracking project.

https://covidtracking.com/data/api

Algorithmic Plan [2.5 pts]: A detailed algorithmic plan for how you will approach the trickiest part of the project. Be sure to clearly highlight which part(s) of your project are algorithmically most complex, and include details of the algorithm(s) you are using in those cases.

The most algorithmically complex element of my project is determining the distance between two objects. This is because the images I receive from the live webcam are 2D images whereas for my project, I will need to calculate the depth in order to calculate distance. My solution to this problem is to create a disparity image using the webcam image. I will need to produce a left and right vision picture from the webcam and then create a disparity image using open cv's stereo. Since disparity is inversely proportional to depth, I will be able to retrieve the depth and thus calculate the distance between two people.

Overall Plan:

➤ Uses choose a city
➤ Webscrapes covid data from google
➤ Opens live webstream from that city
➤ Calculates number of people in the video stream
➤ Calculates distance between each person
➤ Based on people's behavior, mask/ no mask, covid data => creates a risk score
  ○ Take an image
  ○ Create a left-vision, right-vision of the image
  ○ Turns both images to grayscale
  ○ Uses stereo to create a disparity histogram
  ○ Uses stereo to create a disparity image
  ○ Compare the face coordinates from covidData to retrieve the gray coord
  ○ The lighter the gray, closer it is to the camera; darker the gray, farther away
  ○ Use disparity values to calculate the distance between each person
➤ Based on people's behavior, mask/ no mask, covid data => creates a risk score

Timeline Plan [2.5 pts]: A timeline for when you intend to complete the major features of the project.

- ➢ Uses choose a city **DONE**
- ➢ Webscrapes covid data from google **DONE**
- ➢ Opens live webstream from that city **DONE**
- ➢ Calculates number of people in the video stream **Works but not accurate**
- ➢ Calculates distance between each person **Need to implement by : 12/1**
  - ○ Take an image **DONE**
  - ○ Create a left-vision, right-vision of the image **DONE**
  - ○ Turns both images to grayscale **DONE**
  - ○ Uses stereo to create a disparity histogram **DONE**
  - ○ Uses stereo to create a disparity image **DONE**

  - ○ ~~Compare the face coordinates from covidData to retrieve the gray coord~~ **11/31**
  - ○ ~~The lighter the gray, closer it is to the camera; darker the gray, farther away~~ **11/31**
  - ○ ~~Use disparity values to calculate the distance between each person~~ **11/31**

TP2 Update:

We will calculate the distance by using the "person's" center point. This point is parallel to the group therefore no need for depth calculation.

I will be creating covid data graphs. For every state, I will create a cumulative covid cases tracker based on data from the covid tracking project.

TP 3 UPDATE:

Added linear regression, exponential regression, calculated 1st and 2nd derivatives. Also added a covid risk trend for 15 hours of running my program as a service. Added info icons.

 https://covidtracking.com/data/api

- ➢ Based on people's behavior, mask/ no mask, covid data => creates a risk score **12/2**

Version Control Plan [1.5 pts]: A short description **and image** demonstrating how you are using version control to back up your code. Notes:
  - ○ In google drive, I have a folder called Backup Files. Every night, I upload all the files I have worked on. Currently, I have two main files with my project code.

My Drive > 15-112 > Backup Files ▾

ⓘ **Trash has changed.** Items will be automatically deleted forever after th

Files

📄 CovidDataLATEST.py   📄 Distance Between Pe...

- o

Module List [1 pts]:

- o Open CV, Beautiful Soup and Selenium