Activity 9: Machine Learning

Group No: 33
Group Member:

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Part 3: Image Classification

1. You will be provided with 4 items from one of these groups: Dutchmill Drinkable Yogurt for room 401, Foremost UHT Milk for room 404, and Sparkling Water for room 502

1.1 Capture a video of each item from every direction possible (front, side, back, top, bottom). Each video should only contains 1 item

1.2 Transfer those videos into your laptop

1.3 Create a folder named “train” (case sensitive). Inside that folder, create 4 folders with these names as listed below (the name you must use depends on your room)

401: dutchmill_strawberry, dutchmill_orange, dutchmill_mixed, dutchmill_passionfruit

404: foremost_plain, foremost_sweetened, foremost_chocolate, foremost_strawberry

502: sparkling_colalime, sparkling_honeyyuzu, sparkling_jplemon, sparkling_whitepeach

1.4 Sample images from those videos with ffmpeg using this command

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ffmpeg -i <video file name> -vf fps=1 img%03d.jpg
```

This will output one image every second, named img001.jpg, img002.jpg, img003.jpg, etc. You can generate more photos by adjusting the fps to a higher number. The %03d dictates that the ordinal number of each output image will be formatted using 3 digits. It is recommended that you generate at least 100 images for each item.

Once you’ve generate the image, put them in the appropriate folder that you’ve created earlier

Activity 9: Machine Learning (Part 3)

1.5 In your Google Drive, create a folder named “CEE_Act9-3” (case sensitive) at the root of your google drive, then upload the “train” folder with all the images there.

1.6 Open the Google Colab in this link and follows instructions there

Once you finish, students must inform an instructor or a TA for inspection.

Activity 9: Machine Learning (Part 3)

Outstanding: Model Generalizability

The ability of a good machine learning model is that it must be generalized to unseen data. That is, it must still be able to perform well even when given new data (of the same group) that it hasn't seen before.

To achieve an outstanding score, your model from part 2 and 3 will be tested against another set of data, which is the same group as what you've got, but this data won't be given to you.

The score of your models will be calculated from the accuracy of your models on this set of data, using this formula.

$$Total\ score\ =\ Part\ 2\ Model\ Accuracy\ +\ (3\ *\ Part\ 3\ Model\ Accuracy)$$

The maximum score possible is 400 (since the max accuracy is 100 for each model). You must achieve a total score of at least 320 in order to have a chance at outstanding score. (The score may be adjusted later base on overall performance of the entire class)

Note that just achieving the required score doesn't guarantee you the outstanding score, your model will be further evaluated for the outstanding part.

In order to have a chance at the outstanding score, submit your final word list for part 2 (which could be differ from what you've initially submitted for part 2 earlier), and the link to your model (which will be located at "CEE_Act9-3/model.pt" in your Google Drive) to MyCourseVille assignment titled "Outstanding" within 12:30PM

Note that if the TA fails to open your model due to any reasons, or the timestamp of your model file is after 12:30PM of 29th March 2023, you will be disqualified from outstanding chance immediately.

— THIS IS THE END OF PART 3 AND OUTSTANDING —