Week #13
Person Detection
EECE-4710 IoT and Machine Learning
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1. Objective

Develop and train a model using transfer learning to detect the presence of a dog or a cat in an image.

2. Assignment

Redo the example shown in class, which focused on detecting the presence of a cat or dog in an image.
Cat_Dog_Detection_using_Transfer_Learning_TFL_Micro.ipynb

That notebook was a simplified version of the original notebook from Google, located here:
https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/images/transfer_learning.ipynb

The simplifications included:
1. I did not include the second way to customize a pretrained model:
    a. "*2. Fine-Tuning: Unfreeze a few of the top layers of a frozen model base and jointly train both the newly-added classifier layers and the last layers of the base model. This allows us to "fine-tune" the higher-order feature representations in the base model in order to make them more relevant for the specific task.*"
2. I used MobileNet version 1.

In this assignment, you are asked to change:

Cat_Dog_Detection_using_Transfer_Learning_TFL_Micro.ipynb

to include also the "*2. Fine-Tuning*" part and to use MobileNet2 instead of MobileNet version 1. Read the original tutorial to see how to use MobileNet2 and to copy the text and code boxes for "*2. Fine-Tuning*" part.

Record the new accuracy vs. epoch and cross_entropy vs. epoch plots, as well as Test accuracy. You will have to include these together with the initial ones in your report for comparison purposes.

3. Deliverables

You must write (typed) a report and upload it as a PDF file on D2L. The report should be named "**LastName_hw13.pdf**". The report should include the following sections:
1) Title + course info + your name
2) **Summary.** Describe in one paragraph what the objective of the assignment is.
3) **Cat Dog Detection.** Describe briefly the application. Compare the plots and test accuracy before and after the changes.

4) **Conclusion.** Present your conclusions and describe what issues you encountered and how you solved them.
5) **References.** Include all references that you used, as a numbered list. Cite them in the report itself; do not just list them here.

You should also upload on D2L all your modified colab notebook. Include that and the report file into a .zip named "**LastName_hw13.zip**" and upload it on D2L.