CSCI 4961 project documentation:

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Document:

This project originaly aims to create a prototype of robot that aims to assistant officers in custom clearance for cargo categorization and inspection.

Primary model applied:

MobileNetV2

Structure as follow:

[[conv,3,2,32],

[expanded\_conv,3,1,16,1],

[expanded\_conv,3,2,24,6],

[expanded\_conv,3,1,24,6],

[expanded\_conv,3,2,32,6],

[expanded\_conv,3,1,32,6],

[expanded\_conv,3,1,32,6],

[expanded\_conv,3,2,64,6],

[expanded\_conv,3,1,64,6],

[expanded\_conv,3,1,64,6],

[expanded\_conv,3,1,64,6],

[expanded\_conv,3,1,96,6],

[expanded\_conv,3,1,96,6],

[expanded\_conv,3,1,96,6],

[expanded\_conv,3,2,160,6],

[expanded\_conv,3,1,160,6],

[expanded\_conv,3,1,160,6],

[expanded\_conv,3,1,320,6],

[conv,1,1,1280]

]

+ global\_avg\_pooling+ softmax

File description:

mobilenetV2.py:

Defines the mobilenet v2 structure and automatically parse the network

Ops.py:

Defines the functions necessary for mobilenetv2

Reader:

1 Pull data from corpus into label and img

2 send data down into training queue ,batch of 50 at a time shuffled randomly(error in this feature,unable to resolve)

Trainer:

1 establish session and train the model with 70000 epoch

Test:

1 demo part:

Fetch the model and pass test data into to get results

Difficulties:

Current problems lies in the lack of frontend and also problem with third party queue fetching algorithm(out of bound error due to lack of elements in queue)

Deployment of the project:

1 pull from github repo

2 unzip the dataset.7z file to the original folder

3 in the robot-proto folder , run trainer.py to reestablish model

However there still exists bugs in this file:

OutOfRangeError (see above for traceback): RandomShuffleQueue '\_1\_shuffle\_batch\_join/random\_shuffle\_queue' is closed and has insufficient elements (requested 50, current size 0)

[[Node: shuffle\_batch\_join = QueueDequeueUpToV2[component\_types=[DT\_FLOAT, DT\_FLOAT], timeout\_ms=-1, \_device="/job:localhost/replica:0/task:0/device:CPU:0"](shuffle\_batch\_join/random\_shuffle\_queue, shuffle\_batch\_join/n)]]

3 if managing to fix this bug then run test.py to test the accuracy of the trained model

Reference StackOverflow

<https://stackoverflow.com/questions/38545362/tensorflow-variable-scope-reuse-if-variable-exists>

<https://www.tensorflow.org/api_docs/python/tf/compat/v1/train/shuffle_batch>

Intro to tensorflow (Chinese version)

Isbn: 9787121370786