The goal of this document is to provide set up instructions for this repository so the conversion pipeline used here can be taken as a reference for other users trying to do the same thing.

Open the terminal and navigate to the location where you want to store the repository

navigate into a file or file path

$ cd [FILENAME]

navigate out of a file into the parent directory

$ cd ..

list files in the current directory

$ ls

Clone the repository

$ git clone <https://github.com/occamLab/PYtorchCoremlConverter.git>

navigate into the repository

$ cd PYtorchCoremlConverter

Activate the virtual environment

$ source venv/bin/activate

Download the pytorch file yolov3-spp.pt from <https://drive.google.com/drive/folders/1uxgUBemJVw9wZsdpboYbzUN4bcRhsuAI>

Run the pytorch to onnx converter

$ python3 pytorch\_to\_onnx.py eval –content-image dummy.jpg

dummy.jpg is a blank jpg image of the proper size necessary for the neural network to perform image processing on it. This is run through the network as a trial image. The converter will observe what the neural network does when processing this image and it will use this to construct a new network in the onnx format which is a close approximation of the network originally used.

Run the onnx to mlcore converter

$ python3 onnx\_to\_coreml.py yolov3.onnx yolov3.mlmodel

this program can convert any onnx file to a corresponding core ml model. You merely need to pass the file you want to convert as the first argument (where yolov3.onnx is you will have [yourfilename].onnx) and the name you want the resultant file to be saved in as the second argument (where yolov3.mlmodel is you will have [yourfilename.mlmodel])

If you want to convert a different model (a model with a different underlying structure from the yolov3 model used here) you will have to write your own pytorch\_to\_onnx.py because it contains code which is structured for converting neural networks in this specific structure. The other files in this folder are all model functions/functionality for this specific model written by <https://github.com/ultralytics/yolov3>

Resources:

<https://github.com/ultralytics/yolov3>

<https://github.com/onnx/tutorials/tree/master/examples/CoreML/ONNXLive#convert-the-onnx-models-to-coreml-models>

<https://medium.com/@alexiscreuzot/building-a-neural-style-transfer-app-on-ios-with-pytorch-and-coreml-76e00cd14b28>

<https://attardi.org/pytorch-and-coreml/>

<https://docs.python-guide.org/dev/virtualenvs/>