H5_tflite_headerFile_conversion

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0.1 Model File Conversions

References:
https://www.tensorflow.org/lite/microcontrollers, https://blog.arduino.cc/2019/10/15/get-started-with-machine-learning-on-arduino/

[1]:
```
# Do necessary imports
import tensorflow as tf
from tensorflow import keras
from tensorflow.keras import layers
```

[2]:
```
import glob
list_keras_filenames = []

for file in glob.glob("*.h5"):
    list_keras_filenames.append(file)

print(list_keras_filenames)
```

```
['ANN_Ah_12.h5', 'ANN_Ah_22.h5', 'ANN_hybrid_12.h5', 'ANN_hybrid_22.h5',
'ANN_IV_12.h5', 'ANN_IV_22.h5', 'DNN_Ah_12.h5', 'DNN_Ah_22.h5',
'DNN_hybrid_12.h5', 'DNN_hybrid_22.h5', 'DNN_IV_12.h5', 'DNN_IV_22.h5']
```

[3]:
```
for keras_filename in list_keras_filenames:
    keras_model = tf.keras.models.load_model(keras_filename)

    # Convert the model to the TensorFlow Lite format with float16 quantization
    converter = tf.lite.TFLiteConverter.from_keras_model(keras_model)
    model = converter.convert()

    # Save the tflite model to disk
    tflite_filename = keras_filename.strip(".h5") + ".tflite"
    open(tflite_filename, "wb").write(model)

    # hexdump the tflite file with name {tflite_name} into a cc header file,␣
 ↪with the same name
    h_filename = keras_filename.strip(".h5") + ".h"
    !xxd -i $tflite_filename > $h_filename
    print("Conversion: {} >> {} >> {} done!".format(keras_filename,␣
↪tflite_filename, h_filename))
```

```
Conversion: ANN_Ah_12.h5 >> ANN_Ah_12.tflite >> ANN_Ah_12.h done!
Conversion: ANN_Ah_22.h5 >> ANN_Ah_22.tflite >> ANN_Ah_22.h done!
Conversion: ANN_hybrid_12.h5 >> ANN_hybrid_12.tflite >> ANN_hybrid_12.h done!
Conversion: ANN_hybrid_22.h5 >> ANN_hybrid_22.tflite >> ANN_hybrid_22.h done!
Conversion: ANN_IV_12.h5 >> ANN_IV_12.tflite >> ANN_IV_12.h done!
Conversion: ANN_IV_22.h5 >> ANN_IV_22.tflite >> ANN_IV_22.h done!
Conversion: DNN_Ah_12.h5 >> DNN_Ah_12.tflite >> DNN_Ah_12.h done!
Conversion: DNN_Ah_22.h5 >> DNN_Ah_22.tflite >> DNN_Ah_22.h done!
Conversion: DNN_hybrid_12.h5 >> DNN_hybrid_12.tflite >> DNN_hybrid_12.h done!
Conversion: DNN_hybrid_22.h5 >> DNN_hybrid_22.tflite >> DNN_hybrid_22.h done!
Conversion: DNN_IV_12.h5 >> DNN_IV_12.tflite >> DNN_IV_12.h done!
Conversion: DNN_IV_22.h5 >> DNN_IV_22.tflite >> DNN_IV_22.h done!
```

Note: Write to a C file

The final step in preparing our model for use with TensorFlow Lite for Microcontrollers was to convert it into a C source file. You can see an example of this format in `hello_world/sine_model_data.cc`. To do so, we can use a command line utility named `xxd`.