Documentation

This file specifies the working of object classification application and the mobilenet model which is used in the android app.

The java classes and their description is given below:

Class	Description
AutoFitTextureView	A TextureView that can be adjusted to a specified aspect ratio.
Camera2BasicFragment	Basic fragments for the Camera.
Camera2BasicFragment.ErrorDialog	Shows an error message dialog.
CameraActivity	Main Activity class for the Camera app.
GpuDelegateHelper	Helper class for GpuDelegate.
ImageClassifier	Classifies images with Tensorflow Lite.
ImageClassifierFloatInception	This classifier works with the Inception-v3 slim model.
ImageClassifierFloatMobileNet	This classifier works with the float MobileNet model.
ImageClassifierQuantizedMobileNet	This classifier works with the quantized MobileNet model.

The CameraActivity is the main Activity class which is launched when the app icon is clicked on the android device. Camera2BasicFragment takes the camera input and converts it into fragments on which the image classifier can acts on.

ImageClassifier class has the code that classifies object and put labels on it. The last three classes load the respective models, which had been converted using TFLiteConverter.

The AutoFitTextureView class:

com.example.android.tflitecamerademo

Class AutoFitTextureView

java.lang.Object android.view.View android.view.TextureView com.example.android.tflitecamerademo.AutoFitTextureView

All Implemented Interfaces:

android.graphics.drawable.Drawable.Callback, android.view.accessibility.AccessibilityEventSource, android.view.KeyEvent.Callback

public class AutoFitTextureView
extends android.view.TextureView

A TextureView that can be adjusted to a specified aspect ratio.

This class sets the user interface accordingly to the device's aspect ratio and switch between interfaces for landscape and portrait mode.

The Camera2BasicFragment class:

com.example.android.tflitecamerademo

Class Camera2BasicFragment

java.lang.Object android.app.Fragment com.example.android.tflitecamerademo.Camera2BasicFragment

All Implemented Interfaces:

android.content.ComponentCallbacks, android.content.ComponentCallbacks2, android.support.v13.app.FragmentCompat.OnRequestPermissionsResultCallback, android.view.View.OnCreateContextMenuListener

public class Camera2BasicFragment

extends android.app.Fragment
implements android.support.v13.app.FragmentCompat.OnRequestPermissionsResultCallback

Basic fragments for the Camera.

The CameraActivity(Main App Activity) Class:

com.example.android.tflitecamerademo

Class CameraActivity

```
java.lang.Object
    android.content.Context
    android.content.ContextWrapper
    android.view.ContextThemeWrapper
    android.app.Activity
    com.example.android.tflitecamerademo.CameraActivity
```

All Implemented Interfaces:

android.content.ComponentCallbacks, android.content.ComponentCallbacks2, android.view.KeyEvent.Callback, android.view.LayoutInflater.Factory2, android.view.View.OnCreateContextMenuListener, android.view.Window.Callback

public class CameraActivity
extends android.app.Activity

Main Activity class for the Camera app.

The MobileNet class:

com.example.android.tflitecamerademo

Class ImageClassifierQuantizedMobileNet

java.lang.Object

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public class ImageClassifierQuantizedMobileNet
extends ImageClassifier

This classifier works with the quantized MobileNet model.

Field Summary

Fields inherited from class com.example.android.tflitecamerademo.lmageClassifier

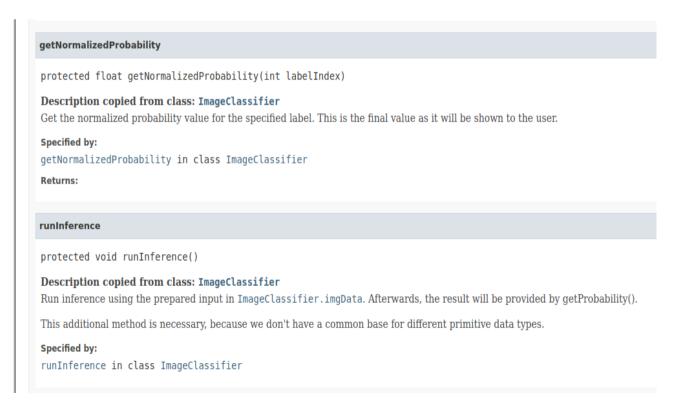
imgData, tflite

This class loads the quantized mobilenet model.

The getModelPath() and getLabelPath() are the most import methods of any of the three classes which load the models for classification.



The other two methods calculates the probabilty and run inference on the model, respectively.



The GpuDelegateHelper class contains the code for running the processes on gpu, if available.

Modifier and Type	Method and Description
static org.tensorflow.lite.Delegate	<pre>createGpuDelegate() Returns an instance of GpuDelegate if available.</pre>
static boolean	<pre>isGpuDelegateAvailable() Checks whether GpuDelegate is available.</pre>
Methods inherited from class java	a.lang.Object
clone, equals, finalize, getClass, h	nashCode, notify, notifyAll, toString, wait, wait, wait
Method Detail	
Method Detail isGpuDelegateAvailable	
	Available()
isGpuDelegateAvailable	
<pre>isGpuDelegateAvailable public static boolean isGpuDelegateA</pre>	
isGpuDelegateAvailable public static boolean isGpuDelegateA Checks whether GpuDelegate is available.	

The mobile app uses the android NNAPI created by tensorflow, for hardware acceleration. The application can run upto 10 threads simultaneously for faster results. As the number of cores available on any modern gpu is high, the computation can pe parrallelized on available cores which can yield even better performance.