Project 3 - Group 1

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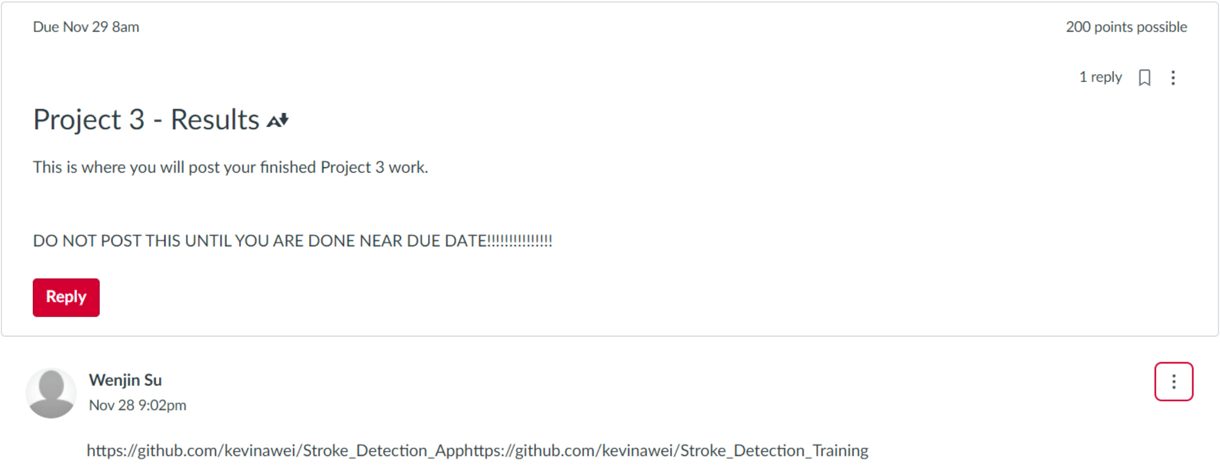
Section 1 Execution Instructions:

Instructions for me to download and run your code. YOU NEED to show me screen shots of you doing this from your uploaded blackboard code.....this forces you to make sure that I can run your code. You MUST have the following screenshots AND give description on what to do: screenshot 1.1 = screen shot of your files uploaded to Project 1 turn in folder on blackboard

Section 1



Due Nov 29 8am

200 points possible

Project 3 - Results

This is where you will post your finished Project 3 work.

DO NOT POST THIS UNTIL YOU ARE DONE NEAR DUE DATE!!!!!!!!!!!!!!

Wenjin Su

Nov 28 9:02pm

https://github.com/kevinawei/Stroke_Detection_Apphttps://github.com/kevinawei/Stroke_Detection_Training

screenshot 1.1 = screen shot of your files uploaded to Project 1 turn in folder on blackboard

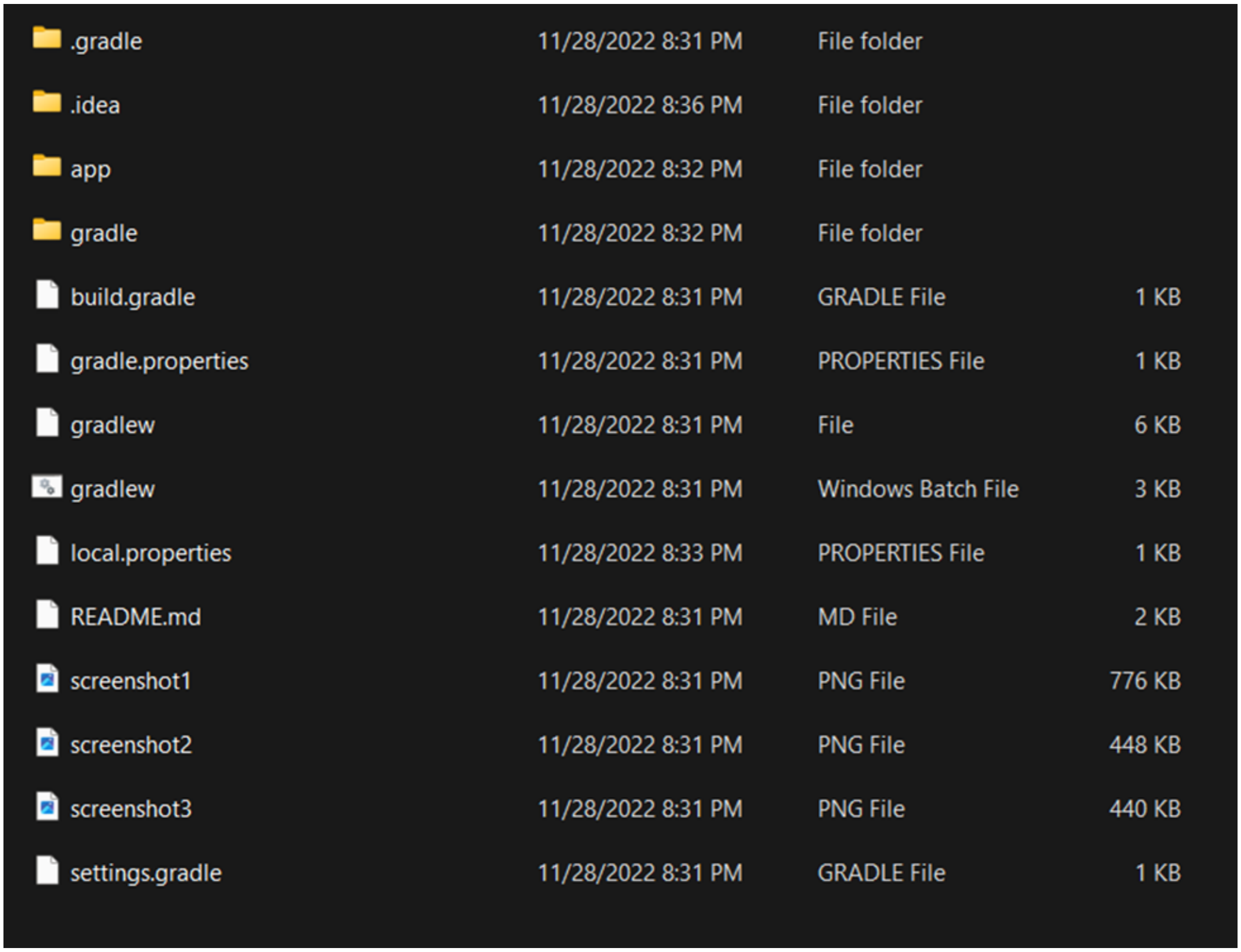
Download source code from Canvas or go to Github repository https://github.com/kevinawei/Stroke_Detection_App

Open Android Studio. From the Welcome screen, select Open an existing Android Studio project.

From the Open File or Project window that appears, navigate to and select the tensorflow-lite/examples/object_detection/android directory. Click OK.

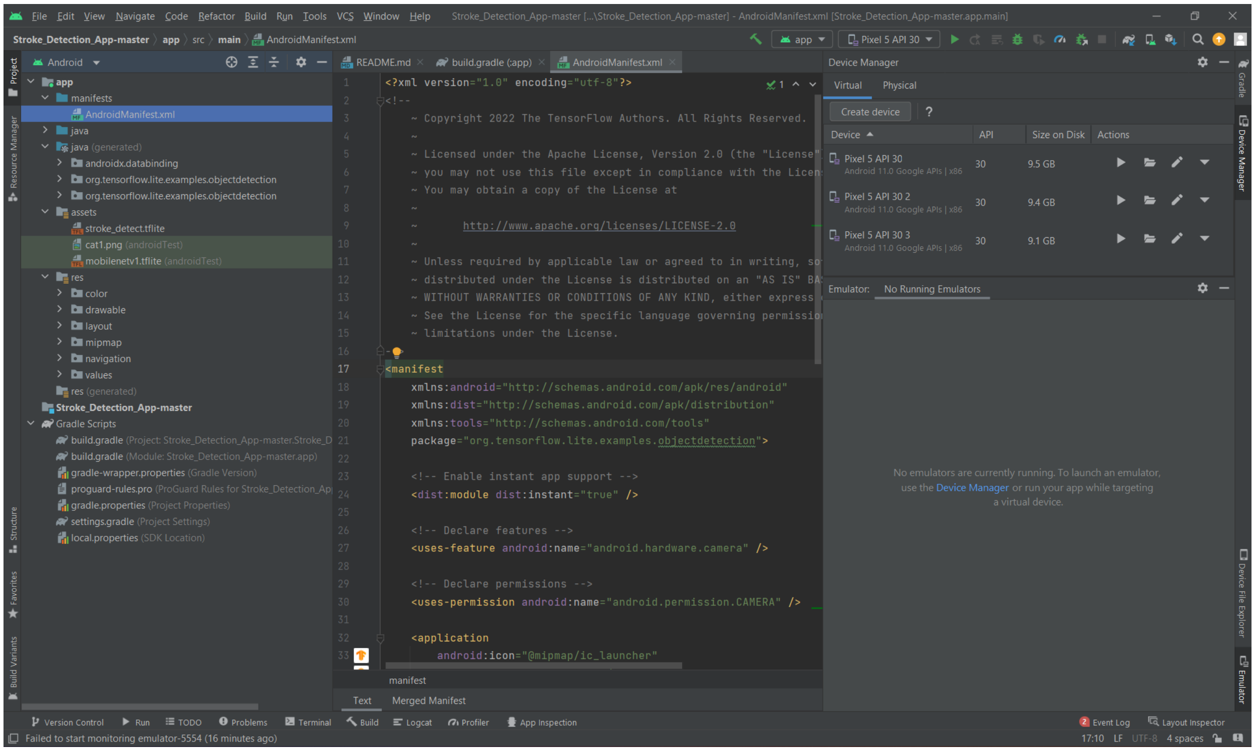
If it asks you to do a Gradle Sync, click OK.

With your Android device connected to your computer and developer mode enabled, click on the green Run arrow in Android Studio.



.gradle	11/28/2022 8:31 PM	File folder	
.idea	11/28/2022 8:36 PM	File folder	
app	11/28/2022 8:32 PM	File folder	
gradle	11/28/2022 8:32 PM	File folder	
build.gradle	11/28/2022 8:31 PM	GRADLE File	1 KB
gradle.properties	11/28/2022 8:31 PM	PROPERTIES File	1 KB
gradlew	11/28/2022 8:31 PM	File	6 KB
gradlew	11/28/2022 8:31 PM	Windows Batch File	3 KB
local.properties	11/28/2022 8:33 PM	PROPERTIES File	1 KB
README.md	11/28/2022 8:31 PM	MD File	2 KB
screenshot1	11/28/2022 8:31 PM	PNG File	776 KB
screenshot2	11/28/2022 8:31 PM	PNG File	448 KB
screenshot3	11/28/2022 8:31 PM	PNG File	440 KB
settings.gradle	11/28/2022 8:31 PM	GRADLE File	1 KB

screenshot 1.2 = directory view of "temp" directory you unzipped file to showing the unziped files and directory structures.



```
app
  manifests
    AndroidManifest.xml
  java
  java (generated)
    androidx.databinding
    org.tensorflow.lite.examples.objectdetection
    org.tensorflow.lite.examples.objectdetection
  assets
    stroke_detect.tflite
    cat1.png (androidTest)
    mobilenetv1.tflite (androidTest)
  res
    color
    drawable
    layout
    mipmap
    navigation
    values
  res (generated)
Stroke_Detection_App-master
Gradle Scripts
  build.gradle (Project: Stroke_Detection_App-master.Stroke_D
  build.gradle (Module: Stroke_Detection_App-master.app)
  gradle-wrapper.properties (Gradle Version)
  proguard-rules.pro (ProGuard Rules for Stroke_Detection_Ap
  gradle.properties (Project Properties)
  settings.gradle (Project Settings)
  local.properties (SDK Location)
```

```xml
<?xml version="1.0" encoding="utf-8"?>
<!--
    ~ Copyright 2022 The TensorFlow Authors. All Rights Reserved.
    ~
    ~ Licensed under the Apache License, Version 2.0 (the "License"
    ~ you may not use this file except in compliance with the Licen
    ~ You may obtain a copy of the License at
    ~
    ~       http://www.apache.org/licenses/LICENSE-2.0
    ~
    ~ Unless required by applicable law or agreed to in writing, so
    ~ distributed under the License is distributed on an "AS IS" BA
    ~ WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express
    ~ See the License for the specific language governing permissio
    ~ limitations under the License.
-
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:dist="http://schemas.android.com/apk/distribution"
    xmlns:tools="http://schemas.android.com/tools"
    package="org.tensorflow.lite.examples.objectdetection">

    <!-- Enable instant app support -->
    <dist:module dist:instant="true" />

    <!-- Declare features -->
    <uses-feature android:name="android.hardware.camera" />

    <!-- Declare permissions -->
    <uses-permission android:name="android.permission.CAMERA" />

    <application
        android:icon="@mipmap/ic_launcher"
```

manifest

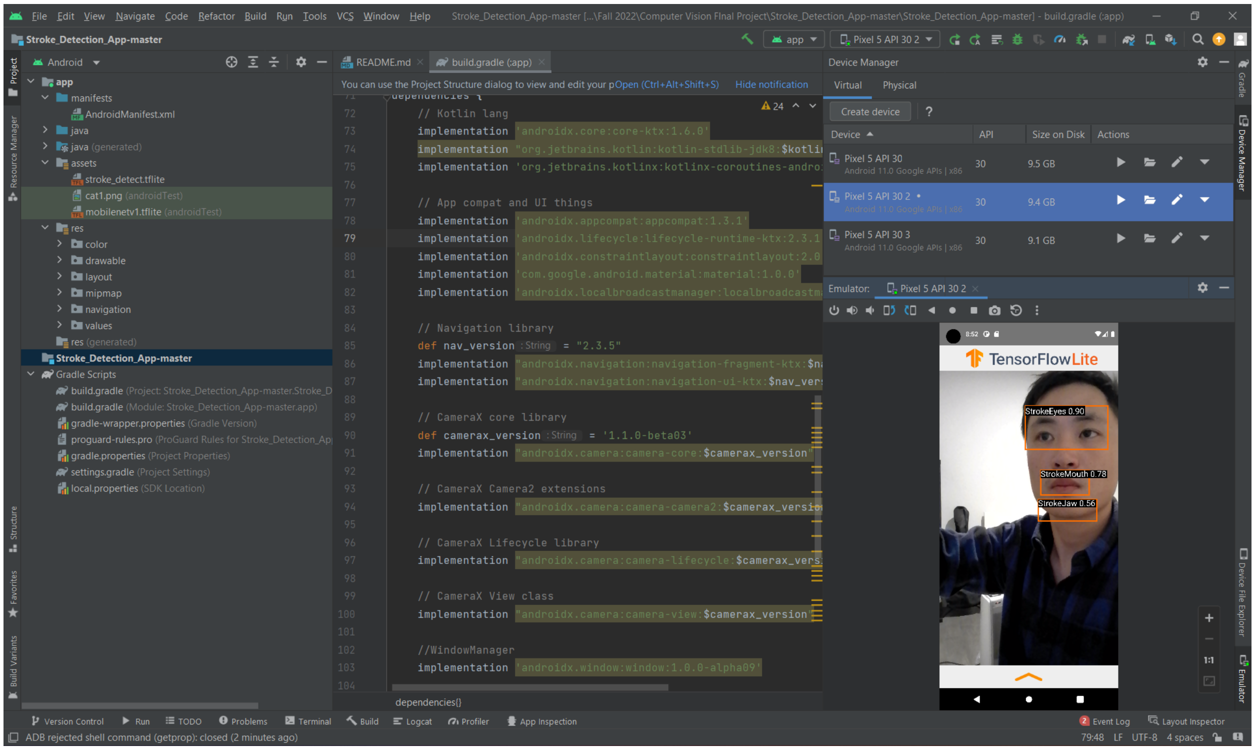
Device ▲	API	Size on Disk	Actions
Pixel 5 API 30 Android 11.0 Google APIs | x86	30	9.5 GB	▶
Pixel 5 API 30 2 Android 11.0 Google APIs | x86	30	9.4 GB	▶
Pixel 5 API 30 3 Android 11.0 Google APIs | x86	30	9.1 GB	▶

No emulators are currently running. To launch an emulator, use the Device Manager or run your app while targeting a virtual device.

Failed to start monitoring emulator-5554 (16 minutes ago)

17:10 LF UTF-8 4 spaces

screenshot 1.3 = Eclipse running where you have opened up project file in "temp" directory.


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
Stroke_Detection_App-master [...\Fall 2022\Computer Vision FInal Project\Stroke_Detection_App-master\Stroke_Detection_App-master] - build.gradle (:app)
Stroke_Detection_App-master
app
Pixel 5 API 30 2
Android
app
manifests
AndroidManifest.xml
java
java (generated)
assets
stroke_detect.tflite
cat1.png (androidTest)
mobilenetv1.tflite (androidTest)
res
color
drawable
layout
mipmap
navigation
values
res (generated)
Stroke_Detection_App-master
Gradle Scripts
build.gradle (Project: Stroke_Detection_App-master.Stroke_D
build.gradle (Module: Stroke_Detection_App-master.app)
gradle-wrapper.properties (Gradle Version)
proguard-rules.pro (ProGuard Rules for Stroke_Detection_Ap
gradle.properties (Project Properties)
settings.gradle (Project Settings)
local.properties (SDK Location)
README.md
build.gradle (:app)
Device Manager
Virtual
Physical
Create device
Emulator:
Pixel 5 API 30 2
8:52
TensorFlowLite
StrokeEyes 0.90
StrokeMouth 0.78
StrokeJaw 0.56
Version Control
Run
TODO
Problems
Terminal
Build
Logcat
Profiler
App Inspection
Event Log
Layout Inspector
79:48 LF UTF-8 4 spaces

You can use the Project Structure dialog to view and edit your pOpen (Ctrl+Alt+Shift+S) Hide notification

```
dependencies {
    // Kotlin lang
    implementation 'androidx.core:core-ktx:1.6.0'
    implementation "org.jetbrains.kotlin:kotlin-stdlib-jdk8:$kotli
    implementation 'org.jetbrains.kotlinx:kotlinx-coroutines-andro

    // App compat and UI things
    implementation 'androidx.appcompat:appcompat:1.3.1'
    implementation 'androidx.lifecycle:lifecycle-runtime-ktx:2.3.1
    implementation 'androidx.constraintlayout:constraintlayout:2.0
    implementation 'com.google.android.material:material:1.0.0'
    implementation 'androidx.localbroadcastmanager:localbroadcastm

    // Navigation library
    def nav_version :String = "2.3.5"
    implementation "androidx.navigation:navigation-fragment-ktx:$na
    implementation "androidx.navigation:navigation-ui-ktx:$nav_vers

    // CameraX core library
    def camerax_version :String = '1.1.0-beta03'
    implementation "androidx.camera:camera-core:$camerax_version"

    // CameraX Camera2 extensions
    implementation "androidx.camera:camera-camera2:$camerax_versio

    // CameraX Lifecycle library
    implementation "androidx.camera:camera-lifecycle:$camerax_vers

    // CameraX View class
    implementation "androidx.camera:camera-view:$camerax_version"

    //WindowManager
    implementation 'androidx.window:window:1.0.0-alpha09'

dependencies{}
```

Device	API	Size on Disk	Actions
Pixel 5 API 30 Android 11.0 Google APIs | x86	30	9.5 GB	
Pixel 5 API 30 2 • Android 11.0 Google APIs | x86	30	9.4 GB	
Pixel 5 API 30 3 Android 11.0 Google APIs | x86	30	9.1 GB	

ADB rejected shell command (getprop): closed (2 minutes ago)

screenshot 1.4 = Eclipse running the application - show screenshot of it running. If I must do something beyond simply hitting the "run" button, you need to give screenshots and step by step instructions.

Execution Instruction: Create/Select a virtual device from device manager. Make sure to enable the front and back cameras for the application.

- Go to Edit for the selected device
- Show advanced settings
- Set Camera Front to Webcam0 and Camera Back to Webcam0

Simply run the application with the above device configuration

Section 2 Code Description

A describing how code is structured and the state of how it works. Give a description for each filename listed.

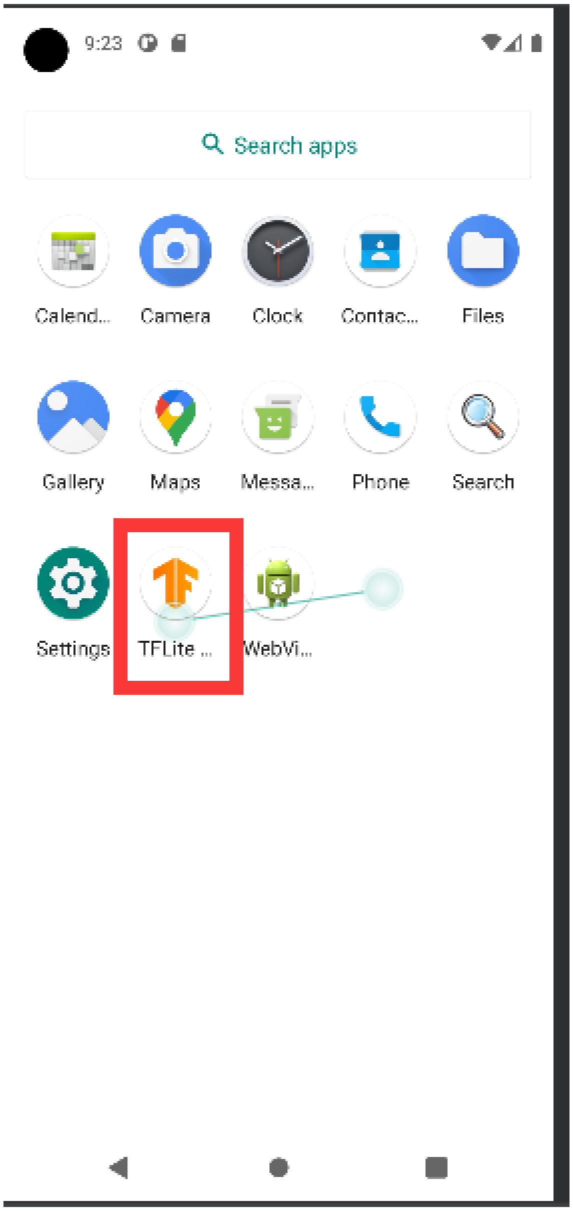
The application code is mostly repurposed from an existing tflite object detection demo which can be found here: https://www.tensorflow.org/lite/examples/object_detection/overview

Small adjustments were made to accommodate our model such as changing the UI and removing other included models which were automatically downloaded on build.

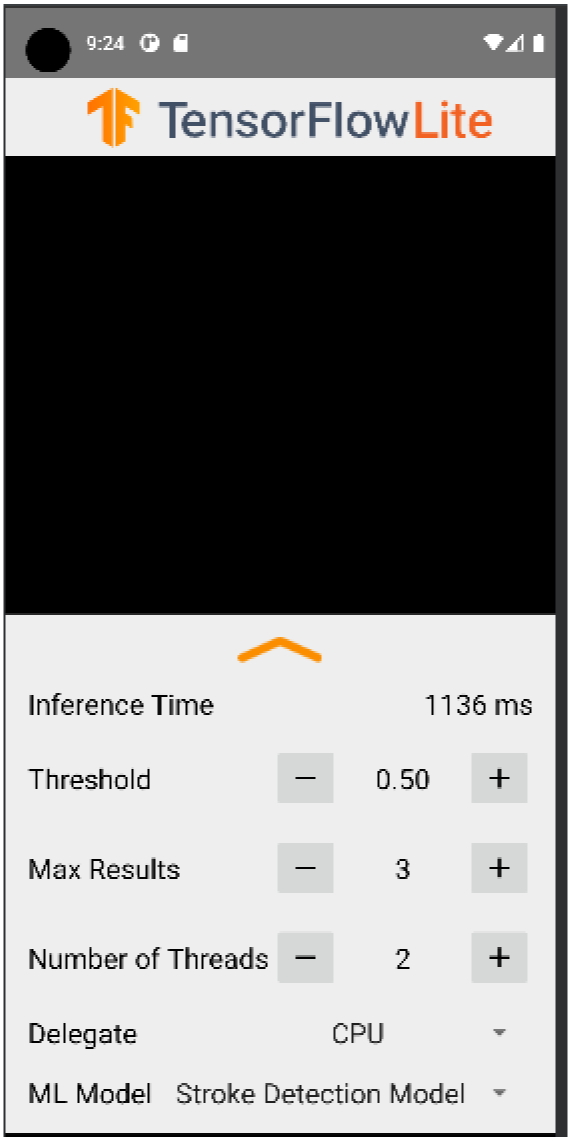
Section 3 Testing:

here you give screen shots of you running the various stages of the program as detailed here:

section 3.1: starting application



screenshot 3.1a= showing icon and resulting starting GUI.



Inference Time 1136 ms

Threshold − 0.50 +

Max Results − 3 +

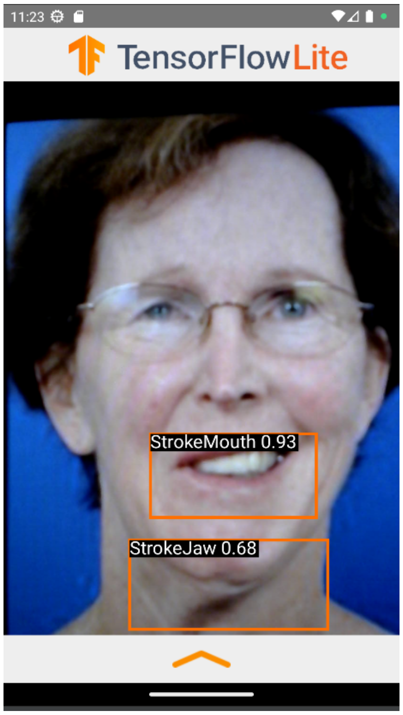
Number of Threads − 2 +

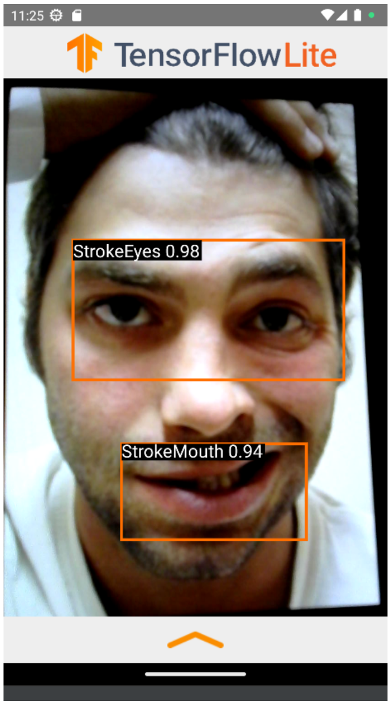
Delegate CPU

ML Model Stroke Detection Model

screenshot 3.1b= the image being viewed in your application that was just loaded.

section 3.2: use-step 1 **you need to discuss your results….discuss the steps involved in using the Android application including how the image or images are taken using the Android camera and the results.**





From testing the app on various stroke patient images, the results are fairly accurate. The model has a difficult time ever detecting any abnormalities in patients' jaws, but this was to be expected as there were not many examples in our training data that included extremely asymmetrical jaw shape. The model also had a difficult time sometimes with detecting StrokeEyes in patients wearing glasses, although sometimes it seemed to be fine (this could be another issue with the variety of the training data provided). Overall the model was very good at detecting eyes and mouth as separate and rarely had any cases with misplaced bounding boxes. There are however many false positives and the model will detect normal looking eyes and mouth as StrokeEyes and Mouth occasionally.

Section 5 Youtube Link:

https://www.youtube.com/watch?v=cFTPK8GRpsU