

Object recognition with Tensorflow Lite

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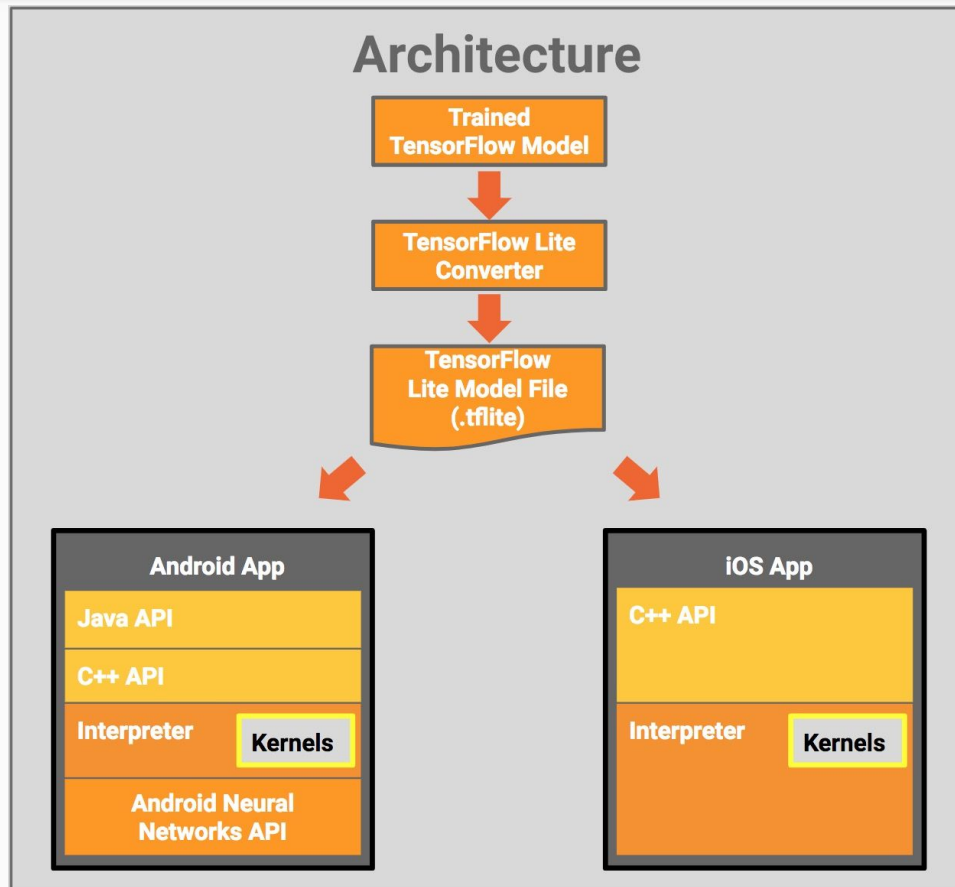
- An application that helps classifying the objects (including things like accessories, human faces, location...) with the help of machine learning, conducted by TensorFlow Lite.
- A little bit different from Tensorflow that Ros had represented before, TensorFlow Lite is the smaller version that aims to support mobile processing, with offline capability.

Main benefit with Tensorflow Lite

- Latency: lower because you don't have to wait for a network response.
- Availability: better even without network connection.
- Speed: new hardware specific to neural networks processing provide significantly faster computation.
- Privacy: the data does not leave the device.
- Cost: no server farm is needed -> reduce cost.

Main difference with Tensorflow?

- TensorFlow Lite has a new mobile-optimized Interpreter, which has the key goals of keeping apps lean and fast.
- TensorFlow Lite provides an interface to leverage hardware acceleration, if available on the device. It does so via the Android Neural Networks library, released as part of Android O-MR1 (Android 8.1)



Pre-conditions on getting started (the fast way)

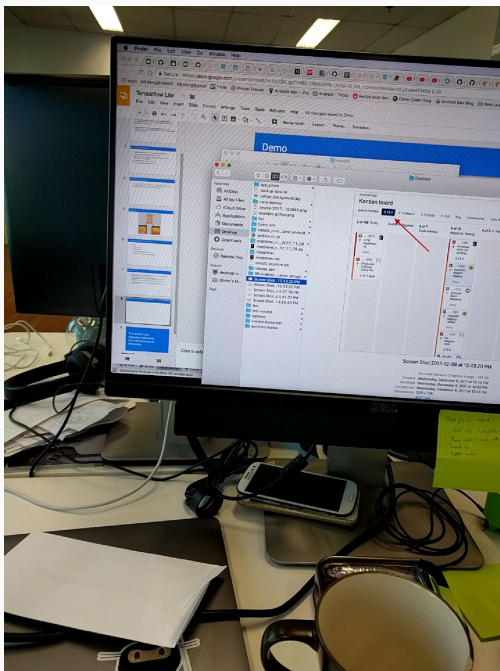
You will need:

- Bazel build system
- Python & pip console.
- For Android: SDK 26, NDK 15 (don't use the 16)
- All the requirement tools & utilities from their repository [here](#)

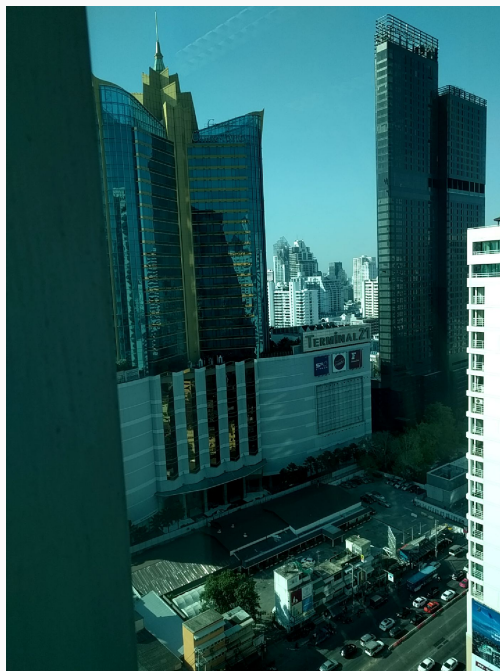
Prepare the models

- We are not going to train the model from the beginning since it's not practical and the training session could take very long for a big set of inputs.
- Our approach is called as “Transfer Learning”, which literally means trying to leverage on the pretrained subset of data, as for this demo I'm using [MobileNet from Google](#)
- A GraphDef (.pb) and labels will be generated as a result of converting input structures.
- Converting .pb file into .lite to use as the input definition assets when integrating with Tensorflow Lite SDK.

Demo



56ms
apple mouse: 0.81
terminal21: 0.09
hillary clinton: 0.07



201ms
terminal21: 0.95
roses: 0.05
sunflowers: 0.00



52ms
apple mouse: 1.00
hillary clinton: 0.00
roses: 0.00

With machine learning empowered on devices & offline supports, there potential for further interesting developments. With TensorFlow Lite, the trip is getting even shorter

Thanks!

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