Add import for TFLite models format

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- Link: #13918
- Status: **WIP**
- Platforms: **All**
- Complexity: 1-2 man-months

Introduction and Rationale

TensorFlow Lite is a framework for on-device inference. Usually, a model file size can be very large but if we convert it to TFLite it can become mobile-friendly and be used on small devices. Also, TFLite supports quantized networks and could be a good platform for quantization support experiments in OpenCV.

Proposed solution

We can support import from *.tflite files in the same way we do for* .pb files (TensorFlow format). To do this, we need to be able to parse files in Flatbuffer format and generate schema. Technical details: - Flatbuffer should be built from sources with OpenCV; Build guide: https://google.github.io/flatbuffers/flatbuffers_guide_building.html - A lot of layers have already been implemented and can be reused - Additional layers to support: TFLite_Detection_PostProcess - Supported operating systems: Android, Windows, MacOS X, Linux - Schema file should be generated during build (via CMake) - TFLite Schema can be built by `./flatc -c ./schema.fbs --gen-mutable` - How to generate schema during build in CMake

Impact on existing code, compatibility

In general, the existing interface shouldn't change much.

Possible alternatives

TFLite models can be converted to a frozen TensorFlow graphs:

```
bazel run --config=opt //tensorflow/lite/toco:toco -- --input_file=model.tflite
--output_file=graph.pb --input_format=TFLITE --output_format=TENSORFLOW_GRAPHDEF
```

But this doesn't work for all. For example, there are several known problems for mediapipe models: https://github.com/google/mediapipe/issues/2770

References

Related feature requests from OpenCV forum:

Does readNetFromTensorflow support ".tflite" format?

Include .tflite or .pb files

Tensorflow lite Graph with OpenCV DNN