

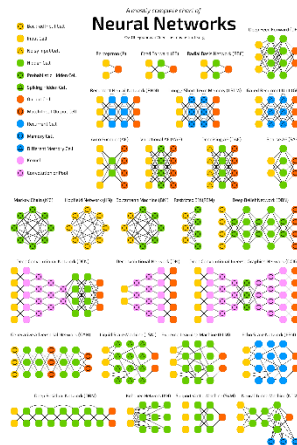
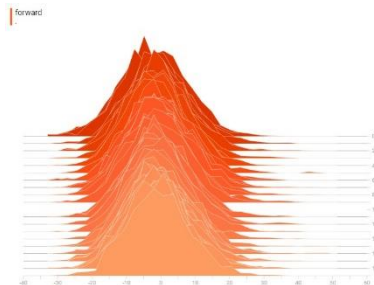
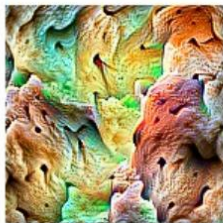
# 深度学习应用开发

## 基于TensorFlow的实践

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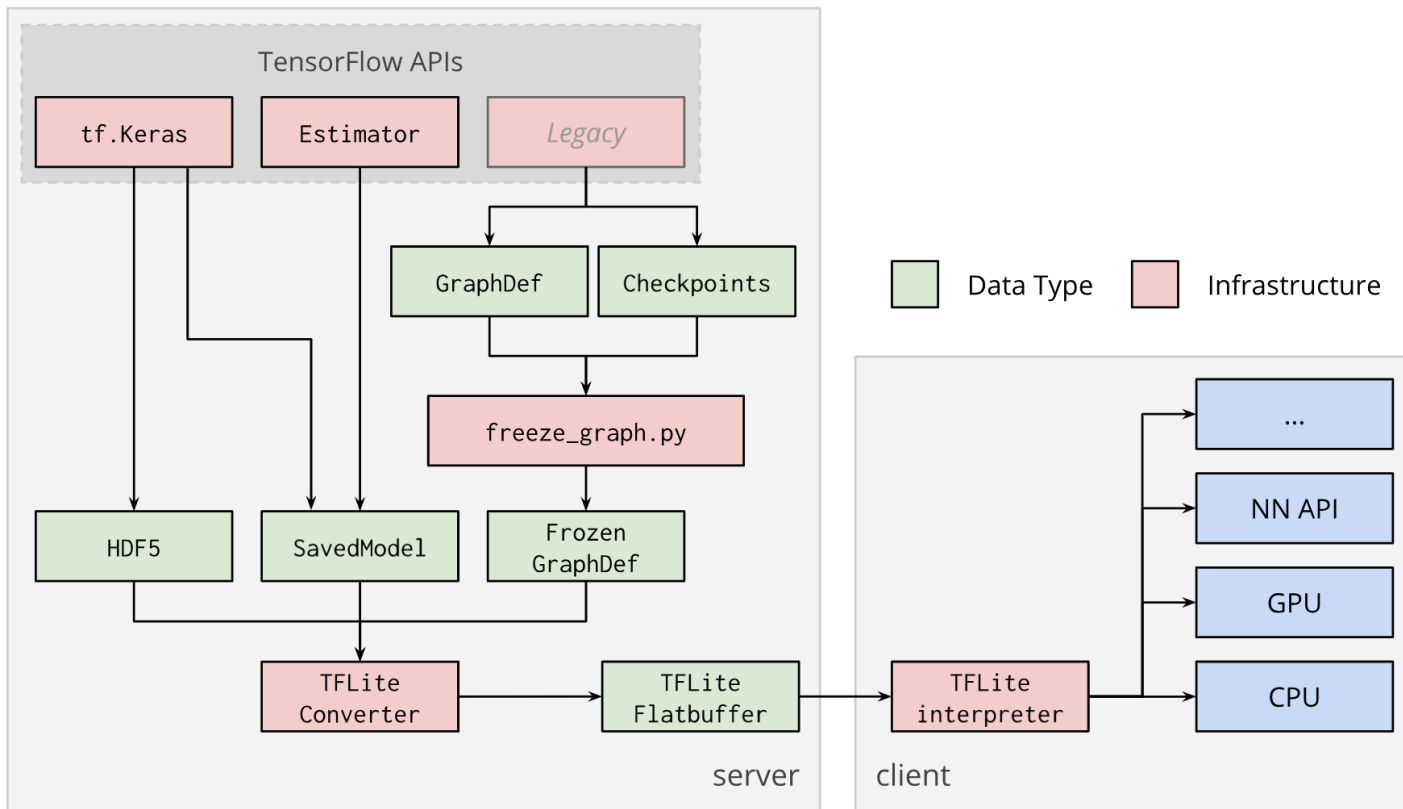
 Dept. of Computer Science  
 Zhejiang University City College




# TFLite应用：手机识别花型



# TF Lite模型生成步骤





## 步骤1. 下载案例源码

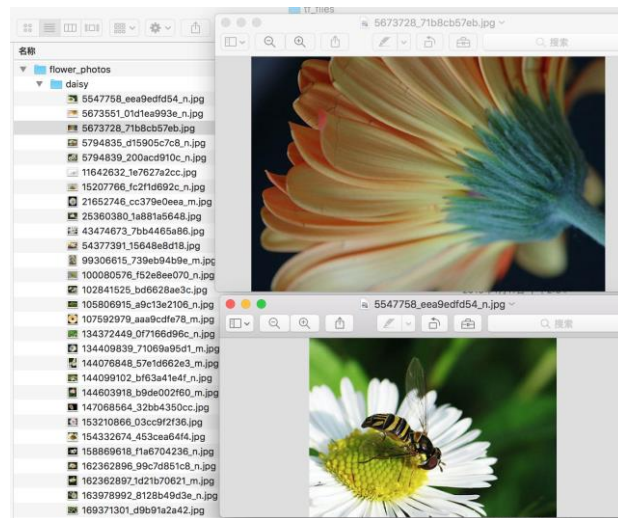
```
Last login: Mon Dec 24 10:36:37 on ttys001
[jincanghongdeMacBook-Pro:~ jincanghong$ cd tflite_demo/
jincanghongdeMacBook-Pro:tflite_demo jincanghong$ git clone https://github.com/googlecode/low-for-poets-2
Cloning into 'tensorflow-for-poets-2'...
remote: Enumerating objects: 405, done.
remote: Total 405 (delta 0), reused 0 (delta 0), pack-reused 405
Receiving objects: 100% (405/405), 33.96 MiB | 4.53 MiB/s, done.
Resolving deltas: 100% (149/149), done.
jincanghongdeMacBook-Pro:tflite_demo jincanghong$ █
```



## 步骤2. 下载案例图片

- 5个子类

1. daisy (雏菊)
2. dandelion (蒲公英)
3. roses (玫瑰)
4. sunflowers (向日葵)
5. tulips (郁金香)



### ▼ flower\_photos

▶ daisy

▶ dandelion

LICENSE.txt

▶ roses

▶ sunflowers

▶ tulips

2016年2月11日 上午4:52

2016年2月11日 上午4:52

2016年2月11日 上午4:52

2016年2月9日 上午10:59

2016年2月11日 上午4:52

2016年2月11日 上午4:52

2016年2月11日 上午4:52



## 步骤3. 重新训练模型

```
jincanghongdeMacBook-Pro:~ jincanghong$ IMAGE_SIZE=224
```

```
jincanghongdeMacBook-Pro:~ jincanghong$ ARCHITECTURE="mobilenet_0.50_${IMAGE_SIZE}"
```

```
jincanghongdeMacBook-Pro:~ jincanghong$ python3 retrain.py --bottleneck_dir=tf_files/bottlenecks --how_many_training_steps=500 --model_dir=tf_files/models/ --summaries_dir=tf_files/training_summaries/"${ARCHITECTURE}" --output_graph=tf_files/retrained_graph.pb --output_labels=tf_files/retrained_labels.txt --architecture="${ARCHITECTURE}" --image_dir=tf_files/flower_photos
```



```
INFO:tensorflow:2018-12-27 16:21:42.304852: Step 0: Train accuracy = 55.0%
INFO:tensorflow:2018-12-27 16:21:42.305104: Step 0: Cross entropy = 1.544754
INFO:tensorflow:2018-12-27 16:21:43.158361: Step 0: Validation accuracy = 43.0% (N=100)
INFO:tensorflow:2018-12-27 16:21:45.155425: Step 10: Train accuracy = 76.0%
INFO:tensorflow:2018-12-27 16:21:45.155828: Step 10: Cross entropy = 1.199681
INFO:tensorflow:2018-12-27 16:21:45.336470: Step 10: Validation accuracy = 71.0% (N=100)
INFO:tensorflow:2018-12-27 16:21:47.025678: Step 20: Train accuracy = 84.0%
INFO:tensorflow:2018-12-27 16:21:47.025826: Step 20: Cross entropy = 0.958607
INFO:tensorflow:2018-12-27 16:21:47.173948: Step 20: Validation accuracy = 89.0% (N=100)
INFO:tensorflow:2018-12-27 16:21:48.681287: Step 30: Train accuracy = 83.0%
INFO:tensorflow:2018-12-27 16:21:48.681455: Step 30: Cross entropy = 0.834695
INFO:tensorflow:2018-12-27 16:21:48.828478: Step 30: Validation accuracy = 81.0% (N=100)
INFO:tensorflow:2018-12-27 16:21:50.253872: Step 40: Train accuracy = 88.0%
INFO:tensorflow:2018-12-27 16:21:50.254013: Step 40: Cross entropy = 0.770691
INFO:tensorflow:2018-12-27 16:21:50.399259: Step 40: Validation accuracy = 88.0% (N=100)
```



## 步骤3. 重新训练模型

localhost:6006/#scalars

TensorBoard

SCALARS

GRAPHS

DISTRIBUTIONS

HISTOGRAMS

- ☐ Show data download links  
☒ Ignore outliers in chart scaling

Tooltip sorting method: default

Smoothing

0.6

Horizontal Axis

STEP RELATIVE WALL

Runs

Write a regex to filter runs

- ☒ mobilenet\_0.50\_224/train  
☒ mobilenet\_0.50\_224/validation

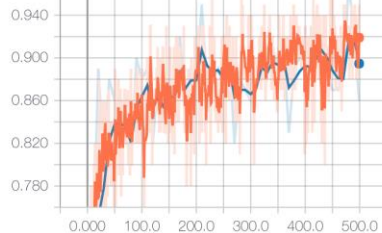
TOGGLE ALL RUNS

tf\_files/training\_summaries

Filter tags (regular expressions supported)

accuracy\_1

accuracy\_1



cross\_entropy\_1

cross\_entropy\_1



tf\_files



bottlenecks



flower\_photos



training\_summaries



retrained\_labels.txt



retrained\_graph.pb