侦测走神司机

项目运行硬件环境

AWS 的 p2.xlarge 实例 （运行时长 90 小时）

项目运行软件环境

AMI： Deep Learning AMI (Ubuntu) Version 5.0

操作系统：Ubuntu 16.04.3 LTS

其他软件和库版本：CUDA 8，CuDNN 7.0，Anaconda 4.4.10，tensorflow 1.5.0，python 3.6.4，Keras 2.1.4，matplotlib 2.1.2，opencv 3.3.0，numpy 1.14.1，pandas 0.22.0 等等

模型运行结果

ResNet50

```
Found 20000 images belonging to 10 classes.
Found 2424 images belonging to 10 classes.
Epoch 1/1
313/313 [==============================] - 441s 1s/step - loss: 0.3925 -
acc: 0.8740 - val_loss: 0.6859 - val_acc: 0.7438
Epoch 1/1
313/313 [==============================] - 443s 1s/step - loss: 0.0458 -
acc: 0.9879 - val_loss: 0.2576 - val_acc: 0.9109
2492/2492 [==============================] - 1085s 435ms/step
Found 18728 images belonging to 10 classes.
Found 3696 images belonging to 10 classes.
Epoch 1/1
293/293 [==============================] - 437s 1s/step - loss: 0.4368 -
acc: 0.8643 - val_loss: 0.2395 - val_acc: 0.9340
Epoch 1/1
293/293 [==============================] - 437s 1s/step - loss: 0.0444 -
acc: 0.9875 - val_loss: 0.2112 - val_acc: 0.9435
2492/2492 [==============================] - 1089s 437ms/step
Found 20577 images belonging to 10 classes.
Found 1847 images belonging to 10 classes.
Epoch 1/1
322/322 [==============================] - 452s 1s/step - loss: 0.3730 -
acc: 0.8873 - val_loss: 0.3289 - val_acc: 0.9139
Epoch 1/1
322/322 [==============================] - 453s 1s/step - loss: 0.0485 -
acc: 0.9873 - val_loss: 0.1589 - val_acc: 0.9437
2492/2492 [==============================] - 1092s 438ms/step
Found 19703 images belonging to 10 classes.
Found 2721 images belonging to 10 classes.
Epoch 1/1
308/308 [==============================] - 451s 1s/step - loss: 0.3894 -
acc: 0.8774 - val_loss: 0.4227 - val_acc: 0.8817
Epoch 1/1
308/308 [==============================] - 451s 1s/step - loss: 0.0396 -
acc: 0.9897 - val_loss: 0.3352 - val_acc: 0.9166
2492/2492 [==============================] - 1095s 440ms/step
Found 19761 images belonging to 10 classes.
Found 2663 images belonging to 10 classes.
Epoch 1/1
309/309 [==============================] - 454s 1s/step - loss: 0.3802 -
acc: 0.8766 - val_loss: 0.7274 - val_acc: 0.7743
Epoch 1/1
309/309 [==============================] - 456s 1s/step - loss: 0.0442 -
acc: 0.9886 - val_loss: 0.3953 - val_acc: 0.8930
2492/2492 [==============================] - 1100s 441ms/step
```

InceptionV3

```
Epoch 1/1
313/313 [==============================] - 622s 2s/step - loss: 0.4123 -
acc: 0.8735 - val_loss: 0.5527 - val_acc: 0.8193
Epoch 1/1
313/313 [==============================] - 622s 2s/step - loss: 0.0364 -
acc: 0.9912 - val_loss: 0.3110 - val_acc: 0.9105
2492/2492 [==============================] - 1608s 645ms/step

100%|██████████| 79726/79726 [05:33<00:00, 239.39it/s]

Found 18728 images belonging to 10 classes.
Found 3696 images belonging to 10 classes.
Epoch 1/1
293/293 [==============================] - 610s 2s/step - loss: 0.4088 -
acc: 0.8780 - val_loss: 0.6285 - val_acc: 0.8929
Epoch 1/1
293/293 [==============================] - 612s 2s/step - loss: 0.0471 -
acc: 0.9882 - val_loss: 0.2401 - val_acc: 0.9456
2492/2492 [==============================] - 1610s 646ms/step

100%|██████████| 79726/79726 [05:25<00:00, 244.96it/s]

Found 20577 images belonging to 10 classes.
Found 1847 images belonging to 10 classes.
Epoch 1/1
322/322 [==============================] - 629s 2s/step - loss: 0.3948 -
acc: 0.8817 - val_loss: 0.1638 - val_acc: 0.9637
Epoch 1/1
322/322 [==============================] - 631s 2s/step - loss: 0.0496 -
acc: 0.9888 - val_loss: 0.1354 - val_acc: 0.9589
2492/2492 [==============================] - 1614s 648ms/step

100%|██████████| 79726/79726 [05:23<00:00, 246.11it/s]
```

```
Found 19703 images belonging to 10 classes.
Found 2721 images belonging to 10 classes.
Epoch 1/1
308/308 [==============================] – 627s 2s/step – loss: 0.4381 –
acc: 0.8596 – val_loss: 0.3822 – val_acc: 0.8666
Epoch 1/1
308/308 [==============================] – 630s 2s/step – loss: 0.0424 –
acc: 0.9873 – val_loss: 0.2010 – val_acc: 0.9456
2492/2492 [==============================] – 1619s 650ms/step
```

`100%|████████████| 79726/79726 [05:29<00:00, 242.29it/s]`

```
Found 19761 images belonging to 10 classes.
Found 2663 images belonging to 10 classes.
Epoch 1/1
309/309 [==============================] – 633s 2s/step – loss: 0.4136 –
acc: 0.8750 – val_loss: 0.3901 – val_acc: 0.8881
Epoch 1/1
309/309 [==============================] – 636s 2s/step – loss: 0.0390 –
acc: 0.9903 – val_loss: 0.3847 – val_acc: 0.8956
2492/2492 [==============================] – 1623s 651ms/step
```

`100%|████████████| 79726/79726 [05:30<00:00, 241.54it/s]`
`100%|████████████| 79726/79726 [05:29<00:00, 241.98it/s]`

Xception

```
Epoch 1/1
625/625 [==============================] - 1147s 2s/step - loss: 0.3527 -
acc: 0.8993 - val_loss: 0.4078 - val_acc: 0.8601
Epoch 1/1
625/625 [==============================] - 1129s 2s/step - loss: 0.0331 -
acc: 0.9922 - val_loss: 0.2910 - val_acc: 0.9039
4983/4983 [==============================] - 2620s 526ms/step
```

100%|███████████| 79726/79726 [05:24<00:00, 245.43it/s]

```
Found 18728 images belonging to 10 classes.
Found 3696 images belonging to 10 classes.
Epoch 1/1
585/585 [==============================] - 1108s 2s/step - loss: 0.3693 -
acc: 0.8956 - val_loss: 0.1697 - val_acc: 0.9523
Epoch 1/1
585/585 [==============================] - 1125s 2s/step - loss: 0.0440 -
acc: 0.9909 - val_loss: 0.2011 - val_acc: 0.9445
4983/4983 [==============================] - 2635s 529ms/step
```

100%|███████████| 79726/79726 [05:27<00:00, 243.20it/s]

```
Found 20577 images belonging to 10 classes.
Found 1847 images belonging to 10 classes.
Epoch 1/1
643/643 [==============================] - 1149s 2s/step - loss: 0.3482 -
acc: 0.9013 - val_loss: 0.3003 - val_acc: 0.9047
Epoch 1/1
643/643 [==============================] - 1150s 2s/step - loss: 0.0392 -
acc: 0.9910 - val_loss: 0.1827 - val_acc: 0.9475
4983/4983 [==============================] - 2626s 527ms/step
```

100%|███████████| 79726/79726 [05:31<00:00, 240.44it/s]

```
Found 19703 images belonging to 10 classes.
Found 2721 images belonging to 10 classes.
Epoch 1/1
616/616 [==============================] - 1132s 2s/step - loss: 0.3438 -
acc: 0.9027 - val_loss: 0.2942 - val_acc: 0.9225
Epoch 1/1
616/616 [==============================] - 1150s 2s/step - loss: 0.0359 -
acc: 0.9921 - val_loss: 0.2049 - val_acc: 0.9489
4983/4983 [==============================] - 2642s 530ms/step
```

100%|███████████| 79726/79726 [05:33<00:00, 239.01it/s]

```
Found 19761 images belonging to 10 classes.
Found 2663 images belonging to 10 classes.
Epoch 1/1
618/618 [==============================] - 1138s 2s/step - loss: 0.3459 -
acc: 0.9019 - val_loss: 0.6162 - val_acc: 0.7923
Epoch 1/1
618/618 [==============================] - 1151s 2s/step - loss: 0.0327 -
acc: 0.9935 - val_loss: 0.4029 - val_acc: 0.8795
4983/4983 [==============================] - 2652s 532ms/step
```

```
100%|████████| 79726/79726 [05:31<00:00, 240.26it/s]
100%|████████| 79726/79726 [05:34<00:00, 238.59it/s]
```