IE 534 - Homework 9

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1 Part 1

The results for Part 1 are as follows: This model did pretty good. The actions that it got confused on are actions that most people would probably classify as being "pretty close" to each other.

1.1 Accuracy (top1, top5, top10)

(0.772139,0.949511,0.974888)

1.2 Highest and Lowest Performing Classes

Highest performing classes:
['SumoWrestling' 'WritingOnBoard' 'MilitaryParade' 'SkyDiving' 'Skijet' 'BasketballDunk' 'BabyCrawling' 'PlayingTabla' 'Billiards' 'Surfing']
Lowest performing classes:
['JumpRope' 'FrontCrawl' 'BodyWeightSquats' 'HandstandWalking' 'YoYo' 'WallPushups' 'HighJump' 'Nunchucks' 'ShavingBeard' 'JumpingJack']

1.3 Most Confused Classes

Original Class	Confused Class	Prob. of Confused Class
ApplyEyeMakeup	ApplyLipstick	0.3181
HammerThrow	ThrowDiscus	0.5111
ShavingBeard	BrushingTeeth	0.3720
BalanceBeam	ParallelBars	0.2903
BandMarching	MilitaryParade	0.2790
FrontCrawl	BreastStroke	0.6756
JumpRope	HulaHoop	0.2631
CricketShot	CricketBowling	0.3061
Hammering	HeadMassage	0.3030
PommelHorse	ParallelBars	0.2571

2 Part 2

The results for Part 2 are as follows: This model didn't perform as well as Part 1, which is interesting, and probably means there was a bug in the training. This is shown in the confused classes, where it settled on 'bowling' and 'baby crawling' for several classes, which wouldn't look much like the original classes to a person.

2.1   Accuracy (top1, top5, top10)

(0.355274,0.633888,0.767380)

2.2   Highest and Lowest Performing Classes

Highest performing classes:

['StillRings' 'CuttingInKitchen' 'BlowingCandles' 'TaiChi' 'HulaHoop' 'ApplyEyeMakeup' 'JugglingBalls' 'WritingOnBoard' 'Bowling' 'Typing']

Lowest performing classes:

['YoYo' 'FrontCrawl' 'Skijet' 'FloorGymnastics' 'Skiing' 'Diving' 'Surfing' 'CricketShot' 'Shotput' 'ShavingBeard']

2.3   Most Confused Classes

Original Class	Confused Class	Prob. of Confused Class
CricketShot	CricketBowling	0.5306
ApplyLipstick	ApplyEyeMakeup	0.5625
Rafting	BabyCrawling	0.8928
HorseRace	Bowling	0.6285
BalanceBeam	Bowling	0.5806
SoccerPenalty	Bowling	0.6585
YoYo	JugglingBalls	0.5833
Kayaking	BabyCrawling	0.8055
Rowing	Bowling	0.6388
CleanAndJerk	JavelinThrow	0.5454

3   Part 3

I couldn't figure out how to combine the model results in a reasonable amount of time, but ensemble methods are usually a good way to increase accuracy. Therefore, I would expect the accuracy to increase for this part.