音樂資訊檢索 HW1

Q1

Accuracy:

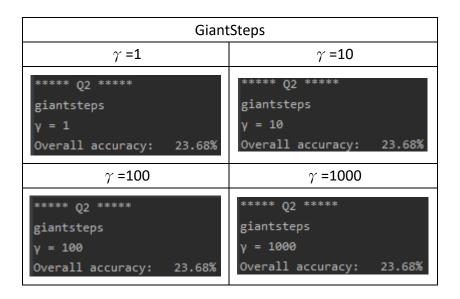
	GTZAN	GiantSteps
***** Q1 '	****	
Genre	accuracy	
blues	7.14%	
country	32.32%	
disco	31.63%	
hiphop	13.58%	***** Q1 *****
jazz	16.46%	giantsteps
metal	24.73%	Overall accuracy: 22.35%
рор	41.49%	
reggae	32.99%	
rock	34.69%	
	- <u> </u>	
Overall ad	ccuracy: 26.52%	

Discussion:

藍調(blues)的準確率最低。或許因為是原始藍調的特色,就是在大調音階上,以 Bb, Eb 取代 B, E(資料來源: http://tx.liberal.ntu.edu.tw/TxMusic/Docs/Audio-Harmony Blues.htm),這樣的調性修改,造成 match template 時產生誤差,比如 match 不到,或被當成小調。

Accuracy:

GTZAN				
γ =1			γ =10	
***** Q2 *	****	***** Q2 *	****	
1		y = 10		
	accuracy		accuracy	
	10.20%	blues	10.20%	
	32.32%	country	32.32%	
-	31.63%	disco	31.63%	
hiphop	13.58%	hiphop	13.58%	
jazz	16.46%	jazz	16.46%	
metal	24.73%	metal	24.73%	
рор	41.49%	рор	41.49%	
reggae	32.99%	reggae	32.99%	
rock	34.69%	rock	34.69%	
Overall ac	curacy: 26.88%	Overall ac	curacy: 26.88%	
	γ =100	,	γ =1000	
**** Q2 *	,	***** Q2 *	·	
***** Q2 *	,		·	
_	,	***** Q2 *	·	
GTZAN γ = 100	,	***** Q2 * GTZAN γ = 1000	·	
GTZAN γ = 100 Genre blues	**** accuracy 10.20%	***** Q2 * GTZAN γ = 1000 Genre blues	**** accuracy 10.20%	
GTZAN γ = 100 Genre blues country	accuracy 10.20% 32.32%	***** Q2 * GTZAN y = 1000 Genre blues country	**** accuracy 10.20% 32.32%	
GTZAN γ = 100 Genre blues country disco	accuracy 10.20% 32.32% 31.63%	***** Q2 * GTZAN γ = 1000 Genre blues country disco	**** accuracy 10.20% 32.32% 31.63%	
GTZAN γ = 100 Genre blues country disco hiphop	accuracy 10.20% 32.32% 31.63% 13.58%	***** Q2 * GTZAN y = 1000 Genre blues country disco hiphop	**** accuracy 10.20% 32.32% 31.63% 13.58%	
GTZAN γ = 100 Genre blues country disco hiphop jazz	accuracy 10.20% 32.32% 31.63% 13.58% 16.46%	***** Q2 * GTZAN y = 1000 Genre blues country disco hiphop jazz	**** accuracy 10.20% 32.32% 31.63% 13.58% 16.46%	
GTZAN γ = 100 Genre blues country disco hiphop jazz metal	accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73%	***** Q2 * GTZAN y = 1000 Genre blues country disco hiphop jazz metal	**** accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73%	
GTZAN γ = 100 Genre blues country disco hiphop jazz metal pop	accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73% 41.49%	***** Q2 * GTZAN y = 1000 Genre blues country disco hiphop jazz metal pop	**** accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73% 41.49%	
GTZAN γ = 100 Genre blues country disco hiphop jazz metal pop reggae	accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73% 41.49% 32.99%	***** Q2 * GTZAN y = 1000 Genre blues country disco hiphop jazz metal pop reggae	**** accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73% 41.49% 32.99%	
GTZAN γ = 100 Genre blues country disco hiphop jazz metal pop	accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73% 41.49%	***** Q2 * GTZAN y = 1000 Genre blues country disco hiphop jazz metal pop	**** accuracy 10.20% 32.32% 31.63% 13.58% 16.46% 24.73% 41.49%	



Discussion:

實作之後,可以發現兩個資料庫的準確率都有些許提升。在 GTZAN 中,只有藍調準確率有所提升,其餘曲風無明顯變化。

單就 γ 的值來看,其大小和準確率似乎沒有明顯的相關性,無論 γ 值增加多少都無法進一步提升準確率。

Accuracy:

GTZAN	GiantSteps
***** Q3 ***** GTZAN Genre accuracy blues 18.57% country 33.64% disco 34.69% hiphop 18.40% jazz 22.41% metal 30.54% pop 45.43% reggae 35.46% rock 41.12% Overall accuracy: 31.53%	***** Q3 ***** giantsteps Overall accuracy: 28.25%

Discussion:

由於此方法和 Q1 基本相同,且因為在此方法下,即使預測的答案和 ground truth 不一樣,仍能得到部分的分數,所以大部分類別的準確率都有所提升。比較值得注意的是原本準確率最低的藍調,在調整之後的準確率有較大幅度的提升。

Q1

Accuracy:

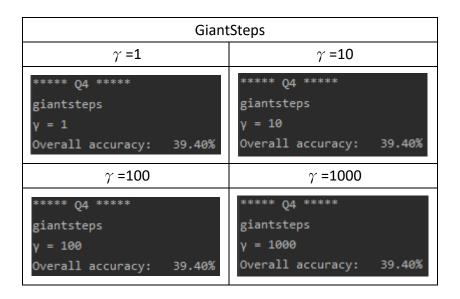
GTZAN	GiantSteps
***** Q4 ***** GTZAN Genre accuracy blues 19.39% country 49.49% disco 34.69% hiphop 18.52% jazz 29.11% metal 34.41% pop 58.51% reggae 57.73% rock 42.86% Overall accuracy: 38.83%	***** Q4 ***** giantsteps Overall accuracy: 38.08%

Discussion:

與原始 Q1 相比,有較明顯的提升,disco 最不明顯

Accuracy:

GTZAN		
γ =1		γ =10
***** Q4 *	***	GTZAN
GTZAN		γ = 10
Genre	accuracy	Genre accuracy
blues	22.45%	blues 22.45%
country	49.49%	country 49.49%
disco	36.73%	disco 36.73%
hiphop	20.99%	hiphop 20.99%
jazz	32.91%	jazz 32.91%
metal	33.33%	metal 33.33%
рор	54.26%	pop 54.26%
reggae	57.73%	reggae 57.73%
rock	39.80%	rock 39.80%
Overall ac	curacy: 39.07%	Overall accuracy: 39.07%
	γ =100	γ =1000
***** Q4 *	****	***** Q4 ****
GTZAN		GTZAN
γ = 100		γ = 1000
Genre	accuracy	Genre accuracy
blues	22.45%	blues 22.45%
country	49.49%	country 49.49%
disco	36.73%	disco 36.73%
hiphop	20.99%	hiphop 20.99%
jazz	32.91%	jazz 32.91%
metal	33.33%	metal 33.33%
рор	54.26%	pop 54.26%
reggae	57.73%	reggae 57.73%
rock	39.80%	rock 39.80%
Overall ac	curacy: 39.07%	Overall accuracy: 39.07%



Discussion:

和 Q2 得出之結論相同,取 \log 能提升些許準確率,在 GTZAN 依舊只有藍調提升,而整體準確率與 γ 大小沒有太大關係。

Accuracy:

GTZAN		GiantSteps
disco hiphop jazz metal pop reggae	accuracy 29.49% 51.41% 42.04% 24.44% 35.57% 41.40% 62.02% 59.07% 47.65%	***** Q4 ***** giantsteps Overall accuracy: 42.68%

Discussion:

Q3 準確率是裡面最高的。

綜合來看,這個方法的準確率是目前最好的,可能的原因是因為他跟 24 個 template 都有比到。而之前先找主音的作法如果主音找錯就萬事休矣。

Accuracy:

BPS-FH		
Binary template		
原始 ACC	加權 ACC	
 accuracy: 16.67%	accuracy: 27.23%	
К	-S	
原始 ACC	加權 ACC	
 accuracy: 17.21%	 accuracy: 25.75%	
A-M	IAPS	
Binary t	emplate	
原始 ACC	加權 ACC	
accuracy: 10.31%	accuracy: 18.86%	
K-S		
原始 ACC	加權 ACC	
accuracy: 10.86%	accuracy: 15.68%	

Discussion:

在這兩個資料集中,無論是哪種方法準確率都不高,就算以加權過後的準確率來看也遠比 Q1~Q4 得到之準確率低,推測可能是因為這樣的判斷方法需要從較少的資料推斷結果,因此較不容易正確的判斷。