

Recommendation System



AutoML 연구실
학부연구생 조성현
21.01.29

Contents

1. Dataset Preview

2. Details of Dataset

- DEAM
- GTZAN
- HOMBURG
- FMA_SMALL
- IRMAS
- MER500
- emoMusic
- Soundtracks
- emotifymusic
- ballroom
- SeyerlehnerUnique
- MIREX-like_mood
- Medley-solos

3. GAFS

Dataset Preview

	Dataset	# of patterns	# of features	# of label	domain
1	DEAM	1801	389	26(148)	Genre
2	GTZAN	999	389	10	Genre
3	HOMBURG	1886	389	9	Genre
4	FMA_SMALL	7996	389	8	Genre
5	IRMAS	1998	389	4	Genre
6	MER500	493	389	5	Emotion
7	emoMusic	1000	389	8	Genre
8	Soundtracks	471	389	8	Emotion
9	emotifymusic	406	389	4	Genre
10	ballroom	726	389	8	Genre
11	SeyerlehnerUnique	3115	389	14	Genre
12	MIREX-like_mood	903	385	28	Mood
13	Medley-solos	21571	384	8	Instrument

Details of Dataset

1. DEAM

- valence & arousal

Labels	Bird of Youth	Blues	Classical	Country	Electronic	Folk	Hip-Hop	International	Jazz	Pop	Rap	Rock	Singer/Songwriter	Soul/RB	World/Folk	acoustic	blues	electronic	groove	hiphop	jazz	pop	rap	reggae	rock	world	TOTAL
# of each label	1	100	147	122	164	106	59	13	137	96	1	182	5	19	5	1	1	2	1	1	6	6	2	1	6	1	1801
Proportion	0.056%	6.274%	12.326%	11.383%	10.827%	9.439%	5.552%	5.552%	11.494%	9.994%	0.056%	10.105%	0.278%	4.831%	0.278%	0.056%	0.056%	0.111%	0.056%	0.056%	0.333%	0.333%	0.111%	0.056%	0.333%	0.056%	100%

2. GTZAN

- 10 genres & tempo & key1 & key2 & beat/downbeat & metrical levels

Labels	blues	classical	country	disco	hiphop	jazz	metal	pop	reggae	rock	TOTAL
# of each label	100	100	100	100	99	100	100	100	100	100	999
Proportion	10.010%	10.010%	10.010%	10.010%	9.910%	10.010%	10.010%	10.010%	10.010%	10.010%	100%

Details of Dataset

1. HOMBURG

- 9 genres

Labels	alternative	blues	electronic	folkcountr	funksoulnb	jazz	pop	raphiphop	rock	TOTAL
# of each label	145	120	113	222	47	319	116	300	504	1886
Proportion	7.688%	6.363%	5.992%	11.771%	2.492%	16.914%	6.151%	15.907%	26.723%	100%

2. FMA-small

- 8 genres

Labels	Electronic	Pop	Experimental	Rock	Folk	Instrumental	Hiphop	International	TOTAL
# of each label	999	999	1000	999	1000	1000	1000	999	7996
Proportion	12.494%	12.494%	12.506%	12.494%	12.506%	12.506%	12.506%	12.494%	100%

Details of Dataset

1. IRMAS

- 4 genres

Labels	country-folk	classical	pop-rock	lat_sou	TOTAL
# of each label	118	991	472	417	1998
Proportion	5.906%	49.600%	23.624%	20.871%	100%

2. MER500

- emotion

Labels	Romantic	Happy	Sad	Devotional	Party	TOTAL
# of each label	100	94	99	100	100	493
Proportion	20.284%	19.067%	20.081%	20.284%	20.284%	100%

Details of Dataset

1. emoMusic

- arousal & valence

Labels	Blues	Classical	Country	Electronic	Folk	Jazz	Pop	Rock	TOTAL
# of each label	125	125	125	125	125	125	125	125	1000
Proportion	12.500%	12.500%	12.500%	12.500%	12.500%	12.500%	12.500%	12.500%	100%

2. Soundtracks

- valence & energy & tension & mood

Labels	Anger	Fear	Sadness	Happiness	Tenderness	Valence	Energy arousal	Tension arousal	TOTAL
# of each label	40	41	42	43	44	86	87	88	471
Proportion	8.493%	8.705%	8.917%	9.130%	9.342%	18.259%	18.471%	18.684%	100%

Details of Dataset

1. emotifymusic

- Induced emotion

Labels	Rock	Classical	Pop	Electronic	TOTAL
# of each label	100	101	102	103	406
Proportion	24.631%	24.877%	25.123%	25.369%	100%

2. ballroom

- 8 genres & tempo & (down-)beats

Labels	Cha Cha	Jive	Quickstep	Rumba	Samba	Tango	Viennese Waltz	Slow Waltz	TOTAL
# of each label	111	61	84	101	90	91	71	117	726
Proportion	15.289%	8.402%	11.570%	13.912%	12.397%	12.534%	9.780%	16.116%	100%

Details of Dataset

1. Klaus unique

Labels	blues	dance	electronica	hiphop	jazz	classical	reggae	rock	schlager	world	country	soul-rnb	volksmusic	wort	TOTAL
# of each label	41	766	187	229	310	744	74	398	59	146	58	39	38	26	3115
Proportion	1.316%	24.591%	6.003%	7.352%	9.952%	23.884%	2.376%	12.777%	1.894%	4.687%	1.862%	1.252%	1.220%	0.835%	100%

2. MIREX-like_mood

Labels	Boisterous	Confident	Passionate	Rousing	Rowdy	Amiable-good natured	Cheerful	Fun	Rollicking	Sweet	Autumnal	Bittersweet	Brooding	Literate	Poignant	Wistful	Campy	Humorous	Silly	whimsical	Witty	Wry	Agressive	Fiery	Intense	Tense - Anxious	Visceral	Volatile	TOTAL
# of each label	22	35	36	38	31	36	38	32	37	26	29	22	25	39	40	32	33	33	29	28	35	31	32	27	34	32	37	34	903
Proportion	2.436%	3.876%	3.987%	4.208%	3.433%	3.987%	4.208%	3.544%	4.097%	2.879%	3.212%	2.436%	2.769%	4.319%	4.430%	3.544%	3.654%	3.654%	3.212%	3.101%	3.876%	3.433%	3.544%	2.990%	3.765%	3.544%	4.097%	3.765%	100%

3. Medley-solos

- 8 instruments

Labels	clarinet	distorted electric guitar	female singer	flute	piano	tenor saxophone	trumpet	violin	TOTAL
# of each label	1311	1854	1744	3555	6032	477	627	5971	21571
Proportion	6.078%	8.595%	8.085%	16.480%	27.963%	2.211%	2.907%	27.681%	100.000%

GAFS

1. Fitness Function.m

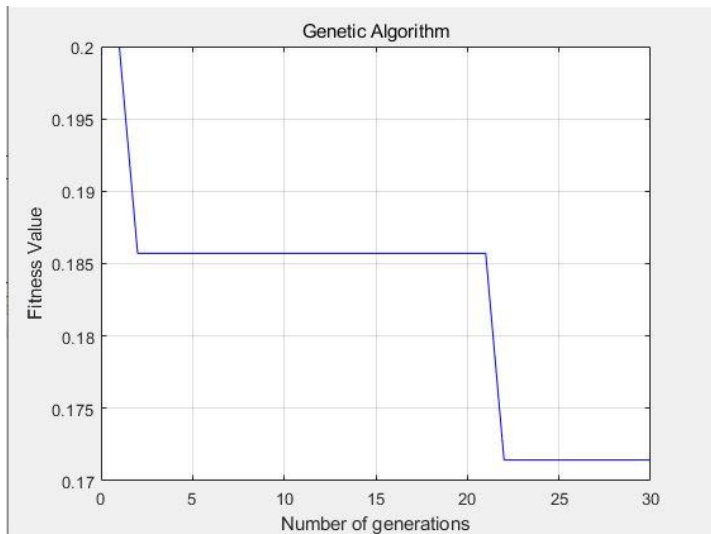
- KNN is applied to result in cost of fitness function. (K=3)

2. GA.m

- Roulette Wheel Selection rule is applied to select parent for the offspring production.

3. Main.m

- Validation set : 20%, Number of chromosomes : 80, maximum number of generations : 30, Crossover Rate : 80%, Mutation Rate : 50%



Generation	1	2~21	22~30
GA fitness value	0.2	0.185714	0.171429