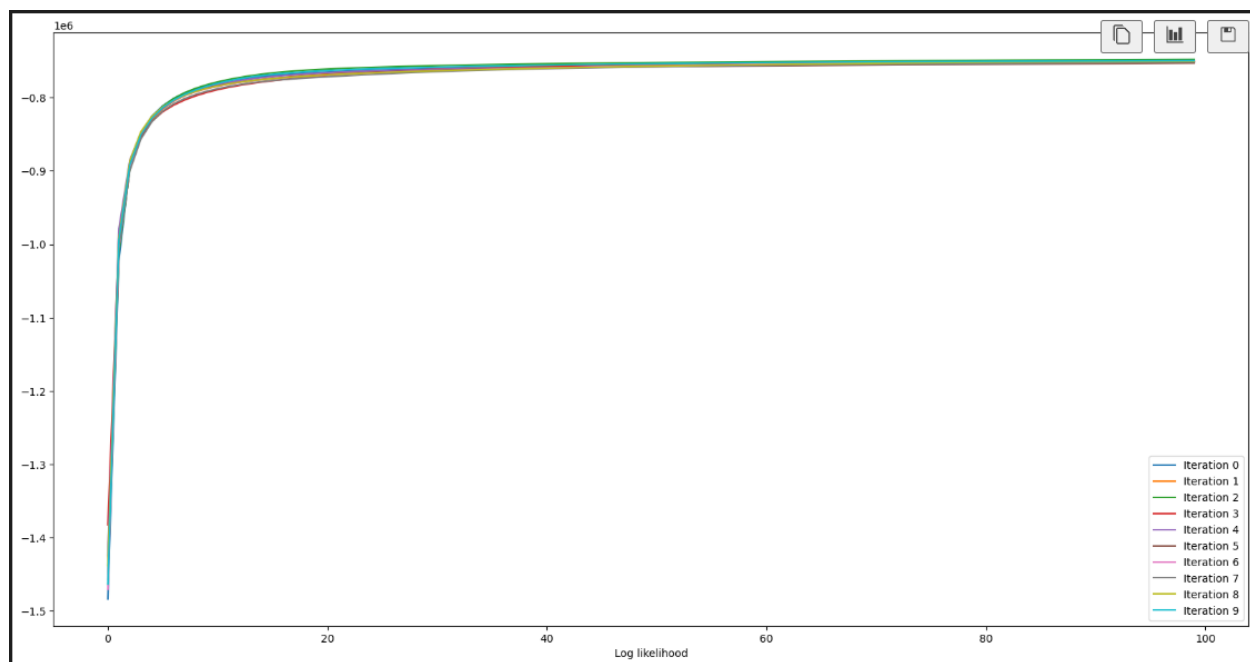


Problem1

(a).

	Iteration	MAP	RMSE
2	2.0	-747859.168742	1.128829
9	9.0	-749525.211221	1.097454
3	3.0	-750043.635637	1.101077
8	8.0	-750336.198936	1.110782
6	6.0	-750650.044479	1.108276
1	1.0	-750826.606076	1.113968
7	7.0	-751419.038591	1.108773
0	0.0	-751505.331538	1.078799
4	4.0	-751620.483206	1.078152
5	5.0	-752883.784540	1.096323



(b).

Star Wars:

	moive_name	distance
171	Empire Strikes Back, The (1980)	0.380104
173	Raiders of the Lost Ark (1981)	0.614647
180	Return of the Jedi (1983)	0.835706
193	Sting, The (1973)	0.888138
198	Bridge on the River Kwai, The (1957)	0.977276
63	Shawshank Redemption, The (1994)	1.066094
209	Indiana Jones and the Last Crusade (1989)	1.086239
519	Great Escape, The (1963)	1.106433
1188	Prefontaine (1997)	1.110900
175	Aliens (1986)	1.113176

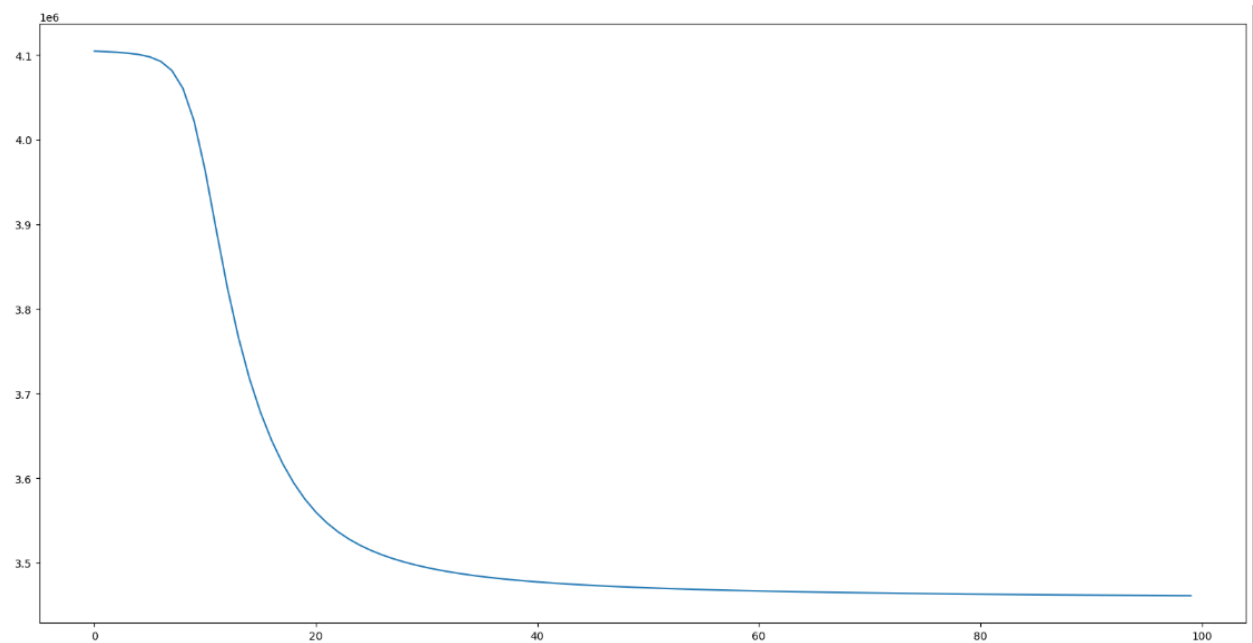
My Fair Lady:

	moive_name	distance
418	Mary Poppins (1964)	1.006996
739	Jane Eyre (1996)	1.039855
142	Sound of Music, The (1965)	1.048720
450	Grease (1978)	1.073920
274	Sense and Sensibility (1995)	1.121201
282	Emma (1996)	1.121766
704	Singin' in the Rain (1952)	1.210452
628	Victor/Victoria (1982)	1.218568
601	American in Paris, An (1951)	1.256800
1146	My Family (1995)	1.267139

GoodFellas:

	moive_name	distance
503	Bonnie and Clyde (1967)	0.751470
199	Shining, The (1980)	0.815122
176	Good, The Bad and The Ugly, The (1966)	0.830389
645	Once Upon a Time in the West (1969)	0.865401
187	Full Metal Jacket (1987)	0.910824
692	Casino (1995)	0.940235
186	Godfather: Part II, The (1974)	0.973353
149	Swingers (1996)	1.003256
237	Raising Arizona (1987)	1.019529
179	Apocalypse Now (1979)	1.026744

Probelm2:



Topic0			Topic1			Topic2			Topic3			Topic4							
topic	word	weight	topic	word	weight	topic	word	weight	topic	word	weight	topic	word	weight					
781	topic0	jury	0.011082	394	topic1	style	0.006009	430	topic2	international	0.007087	110	topic3	low	0.010344	90	topic4	lose	0.009829
904	topic0	sentence	0.012411	361	topic1	piece	0.006452	198	topic2	meeting	0.007287	22	topic3	report	0.010531	195	topic4	hit	0.010229
722	topic0	prosecutor	0.013231	376	topic1	perform	0.006611	280	topic2	agreement	0.007448	98	topic3	fall	0.010862	14	topic4	point	0.011169
629	topic0	prison	0.014523	594	topic1	song	0.007177	75	topic2	political	0.008479	388	topic3	economy	0.011458	124	topic4	third	0.011771
404	topic0	trial	0.018840	473	topic1	dance	0.007259	12	topic2	american	0.010852	93	topic3	increase	0.011753	228	topic4	score	0.012621
313	topic0	judge	0.020072	3	topic1	play	0.007610	11	topic2	states	0.011289	47	topic3	price	0.014512	292	topic4	victory	0.013533
126	topic0	court	0.022041	275	topic1	performance	0.007725	4	topic2	official	0.011999	34	topic3	market	0.015098	3	topic4	play	0.015387
88	topic0	charge	0.022436	332	topic1	artist	0.010335	24	topic2	country	0.012352	152	topic3	rise	0.016994	40	topic4	win	0.017600
17	topic0	case	0.023403	161	topic1	art	0.012397	15	topic2	government	0.012794	97	topic3	rate	0.017386	25	topic4	second	0.018463
162	topic0	lawyer	0.029732	138	topic1	music	0.017034	84	topic2	leader	0.014132	1	topic3	percent	0.030222	5	topic4	game	0.019019
Topic5			Topic6			Topic7			Topic8			Topic9							
topic	word	weight	topic	word	weight	topic	word	weight	topic	word	weight	topic	word	weight					
252	topic5	mother	0.013809	59	topic6	problem	0.007919	61	topic7	keep	0.007845	695	topic8	author	0.006499	84	topic9	leader	0.009752
72	topic5	live	0.014344	254	topic6	cause	0.008754	68	topic7	little	0.007913	290	topic8	editor	0.007000	528	topic9	voter	0.009761
380	topic5	wife	0.015121	785	topic6	treatment	0.009368	80	topic7	question	0.008289	562	topic8	writer	0.008275	383	topic9	democratic	0.011950
177	topic5	friend	0.015873	360	topic6	research	0.009553	50	topic7	put	0.009114	326	topic8	story	0.009351	253	topic9	republican	0.013213
6	topic5	man	0.017564	389	topic6	patient	0.010049	222	topic7	happen	0.009853	3	topic8	play	0.009398	120	topic9	party	0.014348
115	topic5	young	0.018791	539	topic6	medical	0.010888	42	topic7	ask	0.011036	321	topic8	movie	0.010803	216	topic9	election	0.014582
21	topic5	life	0.022939	100	topic6	drug	0.011832	99	topic7	lot	0.011403	417	topic8	character	0.011602	319	topic9	candidate	0.014965
44	topic5	family	0.025591	202	topic6	health	0.012308	187	topic7	really	0.011811	184	topic8	film	0.012941	150	topic9	vote	0.016164
20	topic5	child	0.028500	352	topic6	doctor	0.012397	87	topic7	feel	0.013213	70	topic8	write	0.014246	75	topic9	political	0.020597
19	topic5	woman	0.028825	139	topic6	study	0.013621	31	topic7	thing	0.021761	101	topic8	book	0.016750	132	topic9	campaign	0.022333
Topic10			Topic11			Topic12			Topic13			Topic14							
topic	word	weight	topic	word	weight	topic	word	weight	topic	word	weight	topic	word	weight					
16	topic10	home	0.009262	738	topic11	soldier	0.008513	81	topic12	office	0.009014	599	topic13	red	0.007045	563	topic14	reporter	0.009530
200	topic10	project	0.009488	15	topic11	government	0.008521	558	topic12	arrest	0.010463	1044	topic13	cook	0.007200	259	topic14	interview	0.009725
444	topic10	neighborhood	0.009666	11	topic11	states	0.008819	346	topic12	spokesman	0.010628	41	topic13	add	0.007329	22	topic14	report	0.009965
237	topic10	street	0.010324	684	topic11	troop	0.009606	88	topic12	charge	0.011753	741	topic13	eat	0.007589	41	topic14	add	0.010116
82	topic10	house	0.012757	258	topic11	kill	0.011323	496	topic12	investigation	0.014252	762	topic13	dinner	0.007766	10	topic14	group	0.010193
102	topic10	area	0.012958	12	topic11	american	0.011752	35	topic12	yesterday	0.014661	918	topic13	taste	0.008840	198	topic14	meeting	0.011000
149	topic10	build	0.013152	63	topic11	force	0.013704	22	topic12	report	0.014892	876	topic13	fresh	0.008938	532	topic14	newspaper	0.012627
330	topic10	resident	0.015706	190	topic11	attack	0.014825	169	topic12	officer	0.017506	144	topic13	serve	0.010219	32	topic14	member	0.014299
121	topic10	building	0.023201	188	topic11	military	0.017688	4	topic12	official	0.025503	466	topic13	restaurant	0.010471	287	topic14	event	0.015916
7	topic10	city	0.027036	153	topic11	war	0.023933	67	topic12	police	0.030278	270	topic13	food	0.016670	145	topic14	news	0.016661

Topic15				Topic16			Topic17			Topic18			Topic19						
	topic	word	weight		topic	word	weight		topic	word	weight		topic	word	weight				
408	topic15	investment	0.010644	890	topic16	clean	0.004795	507	topic17	teacher	0.009833	353	topic18	proposal	0.010636	474	topic19	club	0.010108
112	topic15	buy	0.010861	436	topic16	land	0.004886	220	topic17	community	0.010705	13	topic18	program	0.010954	641	topic19	baseball	0.011377
36	topic15	business	0.011608	29	topic16	large	0.005182	282	topic17	class	0.011366	91	topic18	cut	0.011720	291	topic19	contract	0.011395
69	topic15	executive	0.011611	102	topic16	area	0.005373	358	topic17	college	0.011406	8	topic18	plan	0.012247	314	topic19	coach	0.014209
79	topic15	sell	0.011845	23	topic16	place	0.006089	290	topic17	editor	0.012114	49	topic18	money	0.013397	527	topic19	sport	0.014950
235	topic15	bank	0.012953	71	topic16	small	0.006608	409	topic17	education	0.013141	134	topic18	tax	0.013551	5	topic19	game	0.019906
140	topic15	stock	0.013575	877	topic16	tree	0.007843	20	topic17	child	0.013568	2	topic18	state	0.014310	53	topic19	season	0.021118
320	topic15	financial	0.014358	350	topic16	plant	0.010027	13	topic17	program	0.014676	39	topic18	pay	0.014368	3	topic19	play	0.022463
113	topic15	share	0.016007	355	topic16	mile	0.010051	58	topic17	student	0.027111	257	topic18	budget	0.014753	103	topic19	player	0.026394
0	topic15	company	0.028196	233	topic16	water	0.016183	9	topic17	school	0.035931	182	topic18	bill	0.015610	28	topic19	team	0.034364
Topic20				Topic21			Topic22			Topic23			Topic24						
	topic	word	weight		topic	word	weight		topic	word	weight		topic	word	weight		topic	word	weight
328	topic20	product	0.008662	35	topic21	yesterday	0.020340	165	topic22	hand	0.007082	286	topic23	action	0.007933	535	topic24	network	0.007696
112	topic20	buy	0.009816	585	topic21	retire	0.023670	371	topic22	sit	0.007312	126	topic23	court	0.008969	0	topic24	company	0.007819
403	topic20	customer	0.010079	69	topic21	executive	0.024244	315	topic22	walk	0.007416	209	topic23	require	0.009080	700	topic24	machine	0.007921
212	topic20	store	0.010813	55	topic21	director	0.024313	452	topic22	morning	0.007581	477	topic23	legal	0.009291	219	topic24	site	0.008215
86	topic20	cost	0.011912	324	topic21	son	0.025499	6	topic22	man	0.007668	2	topic23	state	0.009967	865	topic24	internet	0.008639
79	topic20	sell	0.014748	391	topic21	vice	0.026978	155	topic22	car	0.007927	17	topic23	case	0.010966	13	topic24	program	0.008775
131	topic20	sale	0.016022	433	topic21	graduate	0.028774	230	topic22	stop	0.008285	27	topic23	issue	0.011005	163	topic24	information	0.009924
36	topic20	business	0.016120	218	topic21	father	0.031218	94	topic22	hour	0.009101	137	topic23	decision	0.012532	74	topic24	system	0.013876
170	topic20	industry	0.018338	33	topic21	president	0.041771	65	topic22	night	0.009224	207	topic23	rule	0.016204	427	topic24	technology	0.014109
0	topic20	company	0.030475	171	topic21	mrs	0.044109	476	topic22	wear	0.010943	48	topic23	law	0.017996	265	topic24	computer	0.019136