ELEN E4903 Homework 5

Kliment Mamykin UNI 2770
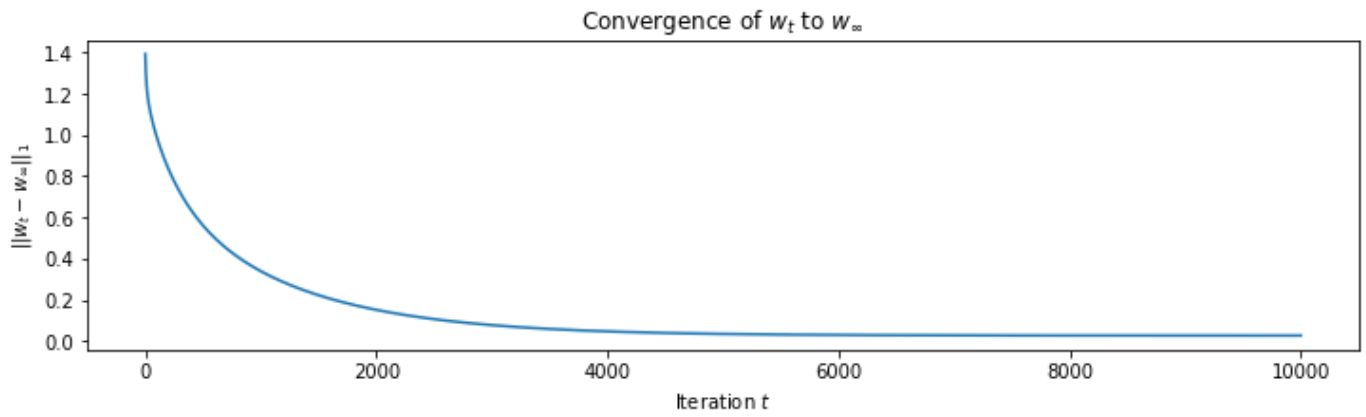
Problem 1 (Markov Chains):

Problem 1(a)

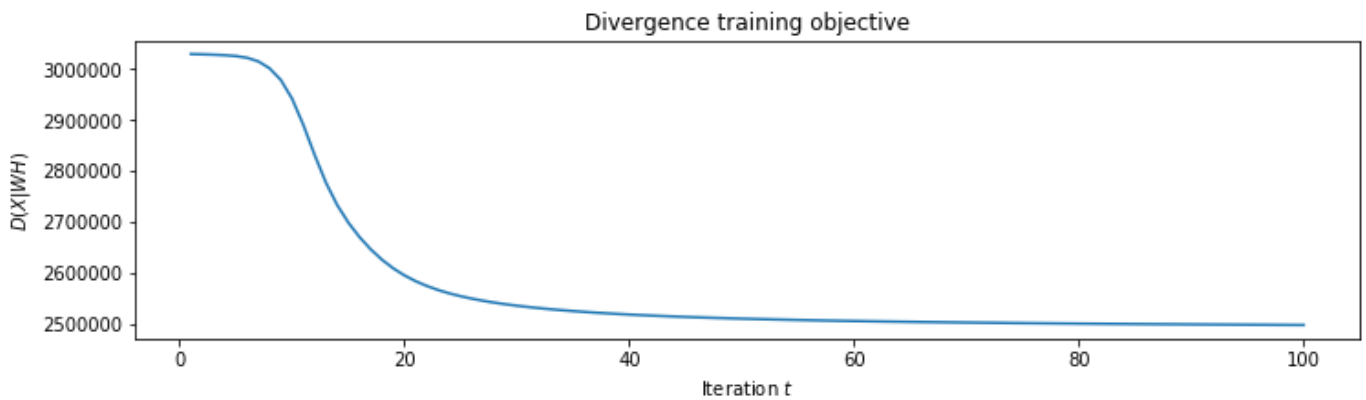Please see next page...

	t=10		t=100		t=1000		t=10000	
	team	prop	team	prop	team	prop	team	prop
0	MountUnion	0.018356	MountUnion	0.065705	Alabama	0.042282	Alabama	0.051114
1	MaryHardin-Baylor	0.012997	Alabama	0.022963	Georgia	0.034923	Georgia	0.042176
2	StFrancisIN	0.011045	Georgia	0.019237	MountUnion	0.034024	OhioState	0.033563
3	UW-Oshkosh	0.009959	UW-Oshkosh	0.017905	OhioState	0.027731	Clemson	0.032494
4	TAMU-Commerce	0.009295	OhioState	0.014859	Clemson	0.026894	Oklahoma	0.031654
5	BrockportSt	0.009169	Clemson	0.014719	Oklahoma	0.026177	Wisconsin	0.031090
6	NorthDakotaSt	0.009008	Oklahoma	0.014205	Wisconsin	0.025686	CentralFlorida	0.028810
7	Alabama	0.008994	Wisconsin	0.013756	CentralFlorida	0.023846	Auburn	0.026506
8	Morningside	0.008794	CentralFlorida	0.013051	Auburn	0.021933	PennState	0.024029
9	Georgia	0.008380	MaryHardin-Baylor	0.012609	PennState	0.019862	NotreDame	0.018050
10	JamesMadison	0.008076	TAMU-Commerce	0.012499	NotreDame	0.014938	TCU	0.017212
11	DelawareValley	0.007939	Auburn	0.011959	TCU	0.014247	MiamiFL	0.014377
12	Wartburg	0.007579	StFrancisIN	0.011094	MiamiFL	0.011903	MichiganSt	0.014240
13	IndianaPA	0.007222	PennState	0.010702	MichiganSt	0.011772	OklahomaSt	0.013636
14	Clemson	0.007081	BrockportSt	0.009478	OklahomaSt	0.011289	Iowa	0.012913
15	MinnSt-Mankato	0.006955	NotreDame	0.008179	Iowa	0.010674	Northwestern	0.012505
16	CentralFlorida	0.006753	DelawareValley	0.007976	Northwestern	0.010334	IowaSt	0.012370
17	OhioState	0.006671	NorthDakotaSt	0.007953	IowaSt	0.010248	LSU	0.011565
18	Wisconsin	0.006636	FrostburgSt	0.007861	LSU	0.009573	SouthernCal	0.011439
19	Reinhardt	0.006580	TCU	0.007818	NorthDakotaSt	0.009492	Washington	0.011191
20	StThomas	0.006016	MinnSt-Mankato	0.007645	SouthernCal	0.009478	NorthDakotaSt	0.010939
21	Oklahoma	0.005948	CaseWesternReserve	0.007156	Washington	0.009285	Stanford	0.010549
22	FrostburgSt	0.005506	JohnCarroll	0.006855	UW-Oshkosh	0.009237	MississippiSt	0.010317
23	Ashland	0.005368	MiamiFL	0.006546	Stanford	0.008742	VirginiaTech	0.010060
24	Assumption	0.005324	Harding	0.006452	MississippiSt	0.008541	NorthCarolinaSt	0.009595

Problem 1(b)

Convergence of w_t to w_∞

Problem 2 (Nonnegative Matrix Factorization)

Problem 2(a)

Divergence training objective

Problem 2(b)

car	0.013	country	0.017	police	0.020	sell	0.057	city	0.031
mile	0.012	political	0.014	charge	0.019	sale	0.040	building	0.029
fire	0.009	american	0.012	case	0.017	buy	0.038	house	0.020
hour	0.008	world	0.008	lawyer	0.015	price	0.034	resident	0.016
city	0.008	americans	0.007	court	0.013	store	0.021	street	0.016
drive	0.007	war	0.006	man	0.012	market	0.020	neighborhood	0.016
area	0.007	government	0.006	officer	0.011	offer	0.016	live	0.015
town	0.007	religious	0.006	arrest	0.010	percent	0.016	area	0.014
kill	0.007	states	0.006	law	0.010	purchase	0.015	community	0.013
water	0.007	history	0.006	trial	0.009	customer	0.012	apartment	0.013
game	0.028	white	0.013	official	0.014	music	0.020	company	0.058
team	0.025	wear	0.012	government	0.013	play	0.013	share	0.020
play	0.021	color	0.010	states	0.013	art	0.013	executive	0.017
player	0.019	black	0.010	military	0.013	performance	0.012	business	0.016
season	0.019	blue	0.009	american	0.013	artist	0.010	stock	0.014
coach	0.010	dress	0.009	war	0.011	dance	0.009	industry	0.012
second	0.010	woman	0.007	force	0.009	song	0.009	chief	0.012
score	0.010	design	0.007	country	0.009	perform	0.008	operation	0.010
win	0.009	fashion	0.007	leader	0.008	production	0.008	large	0.009
ball	0.008	red	0.007	international	0.007	theater	0.008	firm	0.009
room	0.021	school	0.023	pay	0.025	write	0.024	water	0.012
table	0.017	program	0.017	money	0.020	letter	0.021	pound	0.012
restaurant	0.017	student	0.017	budget	0.013	list	0.015	food	0.011
dinner	0.015	child	0.014	tax	0.013	paper	0.013	dry	0.010
hotel	0.012	education	0.011	cost	0.013	information	0.013	fresh	0.010
bar	0.011	health	0.011	cut	0.011	article	0.013	heat	0.010
drink	0.010	drug	0.010	state	0.011	book	0.012	oil	0.010
eat	0.010	group	0.010	fund	0.011	newspaper	0.011	add	0.009
lunch	0.010	care	0.010	plan	0.010	page	0.011	inch	0.008
food	0.010	number	0.009	government	0.009	name	0.011	minute	0.008
win	0.027	television	0.026	mrs	0.046	member	0.015	percent	0.030
second	0.017	computer	0.020	father	0.045	president	0.014	rise	0.017
race	0.014	network	0.014	son	0.042	official	0.013	rate	0.015
finish	0.011	program	0.011	graduate	0.038	meeting	0.009	market	0.013
final	0.010	internet	0.010	mother	0.029	job	0.009	increase	0.013
third	0.009	system	0.010	daughter	0.029	yesterday	0.009	economy	0.012
match	0.008	technology	0.010	president	0.025	staff	0.009	fall	0.011
world	0.008	video	0.009	retire	0.021	interview	0.009	report	0.010
winner	0.008	broadcast	0.009	marry	0.021	office	0.009	low	0.010
round	0.008	company	0.008	receive	0.020	executive	0.008	growth	0.010
life	0.018	vote	0.019	thing	0.022	editor	0.010	project	0.016
man	0.013	campaign	0.015	lot	0.016	problem	0.009	development	0.015
woman	0.012	state	0.015	ask	0.014	question	0.009	build	0.014
child	0.011	republican	0.013	really	0.012	case	0.008	develop	0.010
book	0.011	election	0.013	feel	0.012	cause	0.007	create	0.010
story	0.011	party	0.012	big	0.011	study	0.007	design	0.009
write	0.010	political	0.012	tell	0.011	suggest	0.006	plant	0.009
love	0.010	candidate	0.011	put	0.010	risk	0.006	space	0.007
family	0.010	issue	0.010	little	0.010	effect	0.006	large	0.007
young	0.009	democratic	0.010	keep	0.010	believe	0.006	decade	0.006