Bangwei Zhou (bz2280)

Professor Paisley
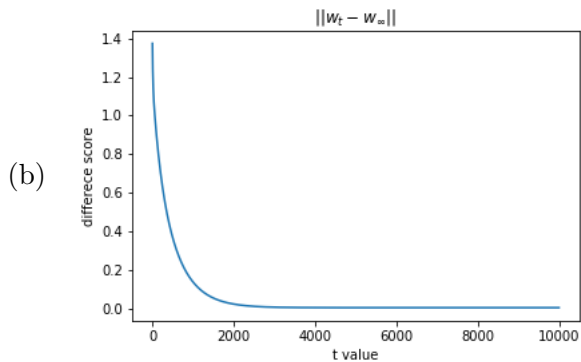
ELEN 4720 HW4

6 May 2020
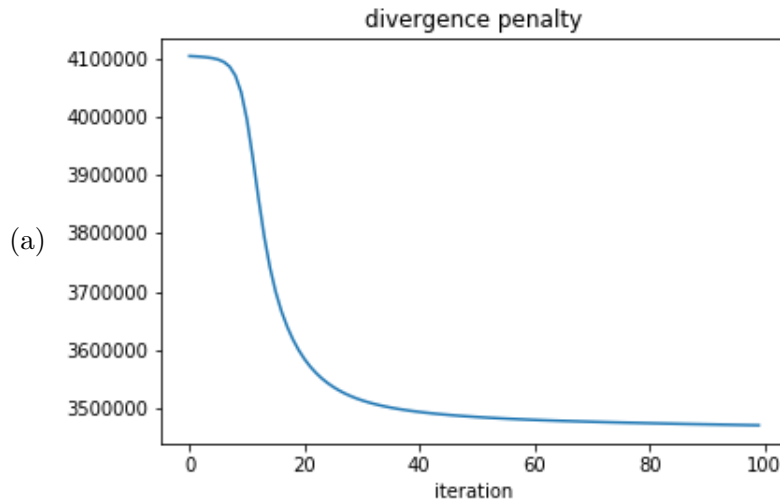
1. **Solution to Problem 1**

(a)

	t_10	t_100	t_1000	t_10000
0	(NorthCentral, 0.012811767852460866)	(LSU, 0.04364232313177094)	(LSU, 0.08441877504803548)	(LSU, 0.09136604712297448)
1	(LSU, 0.012577990806785502)	(Wheaton, 0.025821920667911235)	(Clemson, 0.04552711559660832)	(Clemson, 0.04926187613634674)
2	(Morningside, 0.011511484786453766)	(NorthCentral, 0.024441760152520895)	(OhioState, 0.04345179930190864)	(OhioState, 0.04700926622493663)
3	(Wheaton, 0.011088272722516578)	(Clemson, 0.02370440421016096)	(Georgia, 0.03271952980965489)	(Georgia, 0.03538167825057392)
4	(MinnSt-Mankato, 0.009632960447434464)	(OhioState, 0.022687728222489784)	(Alabama, 0.02467858477602385)	(Alabama, 0.026695336839191012)
5	(Muhlenberg, 0.009507044960042477)	(Morningside, 0.022621153936365095)	(Florida, 0.02369629109833148)	(Florida, 0.02562429247736426)
6	(OhioState, 0.00924059308427411)	(Georgia, 0.01716489849355654)	(Oregon, 0.019265508881883525)	(Oregon, 0.02077912941947386)
7	(UW-Whitewater, 0.009165130709944303)	(StJohnsMN, 0.014990097339229956)	(Auburn, 0.019036871697742357)	(Auburn, 0.020582092345403927)
8	(NorthDakotaSt, 0.009137454648190081)	(WestFlorida, 0.01336723941246717)	(Oklahoma, 0.018703418705854083)	(Oklahoma, 0.020201641742271653)
9	(Clemson, 0.008940922174482424)	(Alabama, 0.012917325410917094)	(PennState, 0.017974044767656055)	(PennState, 0.01942877308356717)
10	(WestFlorida, 0.008784601054926521)	(UW-Whitewater, 0.012836111009245208)	(Wisconsin, 0.015164942292085717)	(Wisconsin, 0.016391976713943292)
11	(MarianIN, 0.008515273738045224)	(Florida, 0.012439731429524025)	(NotreDame, 0.014647394893991705)	(NotreDame, 0.01582027362072581)
12	(StJohnsMN, 0.008487694676311256)	(Muhlenberg, 0.011238356823187396)	(Minnesota, 0.014200946891226876)	(Minnesota, 0.015347274013363848)
13	(MountUnion, 0.007652927443343398)	(Oregon, 0.010530153820536372)	(Baylor, 0.012703630935424098)	(Baylor, 0.01371642032166987)
14	(FerrisSt, 0.007121628682655154)	(Auburn, 0.010020906678496859)	(Michigan, 0.01204519422429918)	(Michigan, 0.013023117638153447)
15	(GrandView, 0.0071139827988428)	(Oklahoma, 0.01001186871387198)	(Utah, 0.011702530075842113)	(Utah, 0.012616726611933204)
16	(Georgia, 0.007012965844168992)	(MinnSt-Mankato, 0.009751799868407972)	(Memphis, 0.011663113807652337)	(Memphis, 0.01258985182657118)
17	(MaryHardin-Baylor, 0.006777611776414179)	(MarianIN, 0.009582594797685003)	(Iowa, 0.01100608242403478)	(Iowa, 0.011893857088960704)
18	(Lenoir-Rhyne, 0.006162838698118535)	(PennState, 0.00953382196093415)	(AppalachianSt, 0.010923410310336586)	(AppalachianSt, 0.011792334371098173)
19	(SlipperyRock, 0.006088003174674026)	(ValdostaSt, 0.008894226807534522)	(Texas, 0.010186949010360635)	(Texas, 0.011003103867877857)
20	(Oregon, 0.005899844347560555)	(Lenoir-Rhyne, 0.008070141045950463)	(NorthDakotaSt, 0.009224407312785142)	(Navy, 0.009785416171595314)
21	(DelawareValley, 0.005839792628737581)	(Wisconsin, 0.00801890165665059)	(Navy, 0.009071022880704388)	(NorthDakotaSt, 0.009716575910447965)
22	(JamesMadison, 0.005665982985978351)	(NotreDame, 0.007865644214156817)	(TexasA&M, 0.008933178700911149)	(TexasA&M, 0.009657875659429887)
23	(ValdostaSt, 0.005543536206838738)	(Minnesota, 0.007531513746172203)	(BoiseSt, 0.008305811202620549)	(BoiseSt, 0.008943486095946805)
24	(Florida, 0.005436735782310833)	(GrandView, 0.007521041139582097)	(KansasSt, 0.007334202627215997)	(KansasSt, 0.007915602342518641)

(b)

2. Solution to Problem 2

(a)

(b)

Topic_1	Topic_2	Topic_3	Topic_4	Topic_5
(0.030761000703302573, 'game')	(0.011917900196568618, 'question')	(0.016353978525628404, 'art')	(0.020619402568702302, 'food')	(0.03127517802080141, 'police')
(0.03074155353611475, 'team')	(0.011166121020613663, 'public')	(0.011284861847473451, 'artist')	(0.011709698507913266, 'restaurant')	(0.022725175941640426, 'kill')
(0.02302375315685766, 'play')	(0.009869802690814252, 'issue')	(0.010477609009810313, 'collection')	(0.010748768302529608, 'serve')	(0.0183150677655712, 'officer')
(0.021459798924330226, 'player')	(0.009440505755740035, 'view')	(0.010081019595574035, 'museum')	(0.009470282128743599, 'eat')	(0.016756079458152075, 'man')
(0.02015904905833407, 'season')	(0.007951766721976965, 'point')	(0.009069100597855326, 'design')	(0.009209761356454715, 'dinner')	(0.013202510570031092, 'arrest')
(0.012492457633708017, 'win')	(0.007546981202033162, 'thing')	(0.008992078940739449, 'photograph')	(0.00902553438679819, 'fresh')	(0.012253781109616646, 'crime')
(0.01170689116419196, 'coach')	(0.006418053270688196, 'important')	(0.008635191581827269, 'exhibition')	(0.008957556706603685, 'taste')	(0.011827268910923509, 'death')
(0.011216712142330954, 'point')	(0.006121653780861646, 'suggest')	(0.007382544462472633, 'painting')	(0.007741931996579155, 'cook')	(0.010313938758422049, 'official')
(0.010593744638269325, 'second')	(0.0059796045849611, 'change')	(0.007075144773578561, 'house')	(0.007713348138815011, 'fish')	(0.009603602515657048, 'attack')
(0.009694145077254733, 'victory')	(0.005804049445340569, 'add')	(0.007032157951763621, 'open')	(0.007365493689787171, 'add')	(0.009430660990257567, 'fire')

Topic_6	Topic_7	Topic_8	Topic_9	Topic_10
(0.02882509047960062, 'money')	(0.017973086814365526, 'state')	(0.014074834504006132, 'drug')	(0.01863325633569903, 'thing')	(0.03994969458177388, 'company')
(0.025552796816475244, 'pay')	(0.012614413116790771, 'bill')	(0.01378876027943205, 'health')	(0.01785493659897722, 'tell')	(0.02090767598919828, 'executive')
(0.016941682384808723, 'cost')	(0.011907721581195978, 'program')	(0.013035815551424997, 'study')	(0.014952462301978171, 'ask')	(0.01706539488790093, 'president')
(0.009587001381342268, 'percent')	(0.011320042822908615, 'budget')	(0.012997411061011934, 'doctor')	(0.012676149535772941, 'feel')	(0.01592595277909748, 'business')
(0.008052020278111327, 'dollar')	(0.00986584389488836, 'plan')	(0.01169478585872155, 'report')	(0.011658080660513477, 'really')	(0.01300581776382036, 'chief')
(0.007748355141853159, 'fund')	(0.009072607589882436, 'vote')	(0.011319856247802067, 'medical')	(0.011457192811319895, 'lot')	(0.012921994142602892, 'sell')
(0.007701229216622487, 'job')	(0.008891458806895635, 'proposal')	(0.010529307532964795, 'patient')	(0.010234258825445135, 'happen')	(0.012391055380503236, 'share')
(0.007488490905966538, 'worker')	(0.008779173792481733, 'law')	(0.010122661006580195, 'cause')	(0.008809093581144943, 'friend')	(0.012194940394357898, 'sale')
(0.007414465608121055, 'big')	(0.00867864018736662, 'tax')	(0.009789959587405391, 'treatment')	(0.008163448554420102, 'job')	(0.010240564415291106, 'market')
(0.007373577060838788, 'income')	(0.008235123847913566, 'cut')	(0.008277762779579647, 'problem')	(0.008027575948808667, 'life')	(0.01006178653985754, 'yesterday')

Topic_11	Topic_12	Topic_13	Topic_14	Topic_15
(0.01431189133113525, 'life')	(0.03113084555696065, 'music')	(0.0069900681601694814, 'small')	(0.018613289772585716, 'political')	(0.040529692839280804, 'school')
(0.010292991815874997, 'world')	(0.016119468813247363, 'performance')	(0.006889397727901402, 'surface')	(0.01654856972765227, 'campaign')	(0.036126416925215704, 'father')
(0.009617330530927354, 'book')	(0.01404898916211632, 'perform')	(0.006567639096224674, 'water')	(0.014447818297098857, 'leader')	(0.032302053569682396, 'student')
(0.009120284383106813, 'man')	(0.013142888564675185, 'dance')	(0.00625764343535216, 'keep')	(0.013514501806334326, 'election')	(0.030246714465253063, 'mother')
(0.008980195119932408, 'american')	(0.011142013392146459, 'play')	(0.0058140094407822, 'material')	(0.012925055464655463, 'party')	(0.03012543384913976, 'son')
(0.007526051653436846, 'write')	(0.01093656353007574, 'theater')	(0.005752222832936378, 'piece')	(0.010954060237242809, 'candidate')	(0.028367604687764683, 'mrs')
(0.007410125158315484, 'woman')	(0.01057995149402894, 'production')	(0.005709586544234485, 'form')	(0.00981004147106647, 'vote')	(0.02713856819517265, 'child')
(0.007403320472244345, 'history')	(0.009900182852817246, 'program')	(0.005511955037951051, 'turn')	(0.009506642684302133, 'democratic')	(0.023791306486962177, 'graduate')
(0.00720698846351475, 'editor')	(0.009825757386274166, 'concert')	(0.00480455939247329, 'large')	(0.008433685263473503, 'support')	(0.0234579251221534, 'daughter')
(0.0070019069835924, 'society')	(0.009723355387298793, 'song')	(0.004685863460459238, 'deep')	(0.007864323642498972, 'republican')	(0.020233133440183813, 'parent')

Topic_16	Topic_17	Topic_18	Topic_19	Topic_20
(0.021525140964440915, 'play')	(0.01271832482222498, 'system')	(0.017109862372910203, 'official')	(0.019454063626485406, 'case')	(0.024278939324428074, 'city')
(0.012731556800421385, 'night')	(0.012485622947822544, 'company')	(0.015639023106175168, 'states')	(0.01865200316636107, 'court')	(0.019469965908504826, 'building')
(0.012529935853183098, 'sound')	(0.01187434165482907, 'technology')	(0.015502838338262, 'american')	(0.01806691978824492, 'lawyer')	(0.014298930923576189, 'resident')
(0.012486020672767436, 'moment')	(0.011360446285133186, 'develop')	(0.012814295572173536, 'government')	(0.01542816247182245, 'law')	(0.014091895882684292, 'area')
(0.010023921025228946, 'voice')	(0.011221297881904731, 'industry')	(0.010645982314209594, 'country')	(0.01323058217174141, 'charge')	(0.0112818922265623, 'town')
(0.009826086906059168, 'love')	(0.009904482597632248, 'project')	(0.008558295607053184, 'international')	(0.01129293390471752, 'judge')	(0.010505719488889976, 'build')
(0.009237071268714899, 'turn')	(0.0093396363686771737, 'build')	(0.008302019946548393, 'meeting')	(0.0106200275653563, 'legal')	(0.010485078486408046, 'live')
(0.008837397178196406, 'stage')	(0.008249602370093256, 'program')	(0.00758396609894251, 'military')	(0.008921580896523978, 'trial')	(0.010393655050712417, 'street')
(0.008326378257219057, 'character')	(0.007950223420411696, 'plant')	(0.007445178639257097, 'agreement')	(0.008572985974530224, 'file')	(0.010318995845477304, 'house')
(0.008241773035395684, 'role')	(0.007931806736706277, 'development')	(0.006834938648980669, 'leader')	(0.00855315119863003, 'investigation')	(0.009540611618283668, 'neighborhood')

Topic_21	Topic_22	Topic_23	Topic_24	Topic_25
(0.02980991668399348, 'television')	(0.022864756502394747, 'woman')	(0.03127816918454686, 'percent')	(0.01633567001369937, 'service')	(0.019635266436341912, 'hit')
(0.022358207699122174, 'film')	(0.01887734633917842, 'wear')	(0.018205718477850373, 'rise')	(0.014178685597059471, 'travel')	(0.01729841821574316, 'win')
(0.019566323259726886, 'movie')	(0.013501701235660999, 'man')	(0.01801954365993587, 'rate')	(0.011716704876692978, 'site')	(0.0157241647391464, 'second')
(0.01631527678621702, 'write')	(0.012190262832885611, 'white')	(0.01757549475395347, 'price')	(0.011107964504973984, 'information')	(0.012654391744320974, 'third')
(0.014485318462952044, 'article')	(0.011797990307886518, 'black')	(0.01674532710513132, 'market')	(0.009641217116387334, 'hour')	(0.011502727362529858, 'race')
(0.013888469969748206, 'editor')	(0.011121697238755768, 'store')	(0.011789498251422902, 'fall')	(0.009595848947872724, 'plane')	(0.010371166060758196, 'start')
(0.013192145205797885, 'book')	(0.011031765806312264, 'dress')	(0.01161860910359709, 'economy')	(0.009285044593363462, 'number')	(0.008516591147540411, 'finish')
(0.010680922013077243, 'story')	(0.008410047205718918, 'young')	(0.011012291463403559, 'increase')	(0.009232164172214828, 'flight')	(0.008367299536260503, 'pitch')
(0.010100245444379426, 'video')	(0.007501484061334093, 'car')	(0.010298203560480945, 'low')	(0.009096783322295999, 'hotel')	(0.007683241482467722, 'double')
(0.009626517129086097, 'writer')	(0.007434342343114354, 'fashion')	(0.009777400719479249, 'report')	(0.009047425621344024, 'trip')	(0.007327236251494457, 'lose')