

Table 6: Example results for the short and long time gap datasets. For each query (“P” for persons, “L” for locations and “O” for objects), we show the returned lists by the best performing proposed methods for each time period and by the best performing baseline GT. Bold font indicates the ground truth, and the numbers in parenthesis are the ranks of the ground truth answers within the returned list.

[2002,2007]→[1992,1996]		
Query	Ranking List Returned by HT+CC+SC	Ranking List returned by GT
Merkel (P)	Kwasniewski, Balladurs, Kono, Chirac . . . Chancellor Kohl (13)	Balladurs, Meri, Kebich, Zepeda . . . Chancellor Kohl (149)
Annan (P)	Boutros Boutrosghali (1) , Juppe, Krajisnik, Holbrooke, Silajdzic	Boutros Boutrosghali (1) , Juppe, Krajisnik, Holbrooke, Silajdzic
Aznar (P)	Silvio Berlusconi, Lamberto Dini, Hun Sen, Jeanluc Dehaene . . . Felipe Gonzalez (8)	Hun Sen, Prince Ranariddh, Kuchma, Javier Solana . . . Felipe Gonzalez (179)
Slovakia (L)	Romania, Portugal, Bulgaria . . . Slovak Republic (109) . . . Czechoslovakia (115)	Romania, Portugal, Bulgaria . . . Slovak Republic (131) . . . Czechoslovakia (186)
Czech (L)	Hungary, Bulgaria, Austria . . . Czechoslovakia (11) . . . Czech Republic (158)	Hungary, Bulgaria, Austria . . . Czechoslovakia (11) . . . Czech Republic (167)
Berlin (L)	Paris, Vienna, Budapest . . . Berlin (30) . . . Bonn (64)	Paris, Vienna, Budapest . . . Berlin (35) . . . Bonn (62)
iPod (O)	laptop (1) , adapter, desktop, CD player (4) . . . PDA (20)	adapter, deskop, CD player (3) . . . laptop (5) . . . PDA (20)
Firefox (O)	web_browser, browser, Netscape Navigator (3) , Netcruiser (4) , Internet Explorer (38)	web browser, bjc600 . . . Netcruiser (14) , Netscape Navigator (21) , Internet Explorer (35)
Nato (O)	Nato (1) , natoled peacekeeping, nationalist serb, krajina serb	nationalist serb, hezbollah guerrillas, krajina serb . . . Nato (7)
[2002,2007]→[1987,1991]		
Singh (P)	Singh, Jatoi, Gandhi (3) , Junejo, Chandra shekhar	Pollino, Lopez, Scopino, Rodriguez . . . Gandhi (226)
Jacques Rogge (P)	IOC, Mike Jacki, Robert Helmick, Werner Fricker . . . Samaranch (14)	Mike Jacki, Robert Helmick, Marat Gramoc, Werner Fricker . . . Samaranch (92)
Vladimir Putin (P)	Boris Yeltsin (1) , Leonid Brezhnev, Helmut_Kohl, Francois Mitterrand . . . Mikhail Gorbachev (9)	Boris Yeltsin (1) , Leonid Brezhnev, Helmut Kohl, Francois Mitterrand . . . Mikhail Gorbachev (9)
Myanmar (L)	Thailand, Pakistan, Bangladesh . . . Burma (50) , Myanmar(51)	Thailand, Pakistan, Bangladesh . . . Burma (50) . . . Myanmar (86)
Czech (L)	Czechoslovakia (1) , Slovakia, Netherlands, Sweden Finland, Scandinavian countries	Netherlands, Sweden Finland, Czechoslovakia (3) . . . Belgium, Finland,
Macedonia (L)	Rwanda, Albania, Myanmar, Tirana . . . Yugoslavia (53)	Rwanda, Albania, Myanmar, Tirana . . . Yugoslavia (95)
Boeing (O)	Airbus (1) , Mcdonnell Douglas (2) , airbus industry, Boeing (4) , Taiwan Aerospace	Boeing (1) , 777s, Daimler, Airbus (6) . . . Mcdonnell Douglas (12)
Linux (O)	Unix (1) , software, OS2 (3) , industrystandard . . . MSDOS (30)	software, industrystandard, Unix (3) . . . MSDOS (52) . . . OS2 (62) ,
spreadsheet (O)	Lotus 123 (1) , database (2) , wordprocessing . . . spreadsheet (19) . . . quattro pro (43)	database (1) , wordprocessing . . . spreadsheet (13) . . . quattro pro (72) . . . Lotus 123 (110)
[2004,2009]→[1967,1976]		
Query	Ranking List Returned by HT+SC	Ranking List returned by GT
Schröder (P)	Wagg, Scliroder, Grossart, Whitburgh . . . Brandt (14)	Munchmeyer, Rmani, Turban, Whitburgh . . . Brandt (485)
Chirac (P)	Pompidou (1) , Mitterrand . . . Poher (25) , d’Estaing(26) . . . Gaulle (793)	Tsatsos, Pompidou (30) . . . Poher (604) , d’Estaing(479) . . . Gaulle (929)
Medvedev (P)	Filbinger, Brezhnev (2) , Podgorny, Lunkov, Alinister	Brezhnev (1) , Sayem, Chissano, Filbinger, Karamnanlist
Zapatero (P)	Rodriguez, Portillo, Seinor, Jumenez . . . Suarez (19)	Garrigues, Concalves, Calazans, Portillo . . . Suarez (46)
Mumbai (L)	Bombay (1) , Karachi, Delhi, Dacca, Delhi	Jakarta, Kualalumpur, Manila, Rangan . . . Bombay (11)
Sri Lanka (L)	Sri Lanka (1) , Ceylon (2) , India, Colomo, Pakistan, Indonesia	Fiji, Pakistan, Madagascar . . . Sri Lanka (22) . . . Ceylon (126)
Myanmar (L)	Burma (1) , Thailand, Laos, Indonesia, Guam	Yemen, Indonedia, Thailand, Maldives . . . Burma (102)
Berlin (L)	Munich, Berlin, Moscow, Vienna . . . Bonn (21)	Prague, Berlin, Moscow, Munich . . . Bonn (485)
[2004,2009]→[1939,1955]		
Query	Ranking List Returned by HT	Ranking List returned by GT
Putin (P)	Kremlin, Kabanov . . . Malenkov (4) . . . Khrushchev (16) . . . Stalin (55)	Zorin, Vinogradov, Malenkov (22) . . . Stalin (321) . . . Khrushchev (353)
Kwasniewski (P)	Celal, President, Chamoun . . . Raczkiewicz (62) . . . Bierut (709)	Omukama, Mostras, Celal . . . Raczkiewicz (184) . . . Bierut (747)
Berlusconi (P)	minister . . . Segni (8) . . . Scelba (120) . . . Pella (266) . . . Gaspero (441)	signor Segni (24) . . . Scelba (247) . . . Pella (507) . . . Gaspero (632)
Koizumi (P)	minister . . . Katayama (3) . . . Hatoyama (12) . . . Yoshida (350) . . . Shidehara (544)	minister . . . Katayama (4) . . . Hatoyama (28) . . . Yoshida (516) . . . Shidehara (778)
Mumbai (L)	Bombay (1) , Delhi, Karachi, Rangoon, Beirut	Delhi, Panjim, Rangoon, Cairo . . . Bombay (9)
Russia (L)	Poland, Finland, Czechoslovakia, Bulgaria . . . Soviet (61)	Finland, Yugoslavia, Poland, Czechoslovakia . . . Soviet (159)
Sri Lanka (L)	India, Colombo, Ahmsd, Indonesia . . . Ceylon (6)	India, Colombo, pakistan, Indonesia . . . Ceylon (289)
Thailand (L)	Indonesia, Philippines, Siam (3) , Malaysia, Manila	China, Hongkong, Laos, Siam (12) , Malaysia