**python3 project2.py -spanbert AlzaSyCd_08r6XxUY6kw8UlNRfPQv4YbtYNEZk8 770de34f24048bef9 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 2 0.7 "bill gates microsoft" 10**

Parameters:
Client key=     AlzaSyCd_08r6XxUY6kw8UlNRfPQv4YbtYNEZk8
Engine key=     770de34f24048bef9
OpenAI key=     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
Method= spanbert
Relation=       Work_For
Threshold=      0.7
Query=  bill gates microsoft
# of Tuples=    10

Loading necessary libraries; This should take a minute or so ...)

=========== Iteration: 1 - Query: bill gates microsoft  ===========
Loading pre-trained spanBERT from ./pretrained_spanbert
URL (1/10): https://en.wikipedia.org/wiki/Bill_Gates
Fetching text from url ...
successful
Trimming webpage content from 129755 to 10000 characters
Webpage length (num characters):  10000
Annotating the webpage using spacy...
Extracted 58 sentences. Processing each sentence one by one to check for presence of right pair of named entity types; if so, will run the second pipeline ...
Total # sentences = 58

         === Extracted Relation ===
         Tokens: ['Bill', 'GatesGates', 'in', '2018BornWilliam', 'Henry', 'Gates', 'III', '(', '1955', '-', '10', '-', '28', ')', 'October', '28', ',', '1955', '(', 'age', '67)Seattle', ',', 'Washington', ',', 'U.S.EducationHarvard', 'University(dropped', 'out)OccupationsBusinessmanphilanthropistinvestorwriterYears', 'active1972', '–']
         Relation: per:employee_of (Confidence: 0.748)
Subject: Bill GatesGates       Object: U.S.EducationHarvard University(dropped
         Adding to set of extracted relations
         ==========

         === Extracted Relation ===
         Tokens: ['Bill', 'GatesGates', 'in', '2018BornWilliam', 'Henry', 'Gates', 'III', '(', '1955', '-', '10', '-', '28', ')', 'October', '28', ',', '1955', '(', 'age', '67)Seattle', ',', 'Washington', ',', 'U.S.EducationHarvard', 'University(dropped', 'out)OccupationsBusinessmanphilanthropistinvestorwriterYears', 'active1972', '–']
         Relation: per:employee_of (Confidence: 0.897)

Subject: Henry Gates III     Object: U.S.EducationHarvard University(dropped
       Adding to set of extracted relations
       ==========


       === Extracted Relation ===
       Tokens: ['U.S.EducationHarvard', 'University(dropped',
'out)OccupationsBusinessmanphilanthropistinvestorwriterYears', 'active1972', '–',
'presentKnown', 'forCo', '-', 'founder', 'of', 'Microsoft', 'and', 'Bill', '&']
       Relation: per:employee_of (Confidence: 0.997)
Subject: active1972    Object: Microsoft
       Adding to set of extracted relations
       ==========


       === Extracted Relation ===
       Tokens: ['U.S.EducationHarvard', 'University(dropped',
'out)OccupationsBusinessmanphilanthropistinvestorwriterYears', 'active1972', '–',
'presentKnown', 'forCo', '-', 'founder', 'of', 'Microsoft', 'and', 'Bill', '&', 'Melinda', 'Gates',
'FoundationTitle', 'Partial', 'list', 'of', 'founded', 'and', 'chaired', 'companies', 'Co', '-']
       Relation: per:employee_of (Confidence: 0.996)
Subject: active1972    Object: Bill & Melinda Gates
       Adding to set of extracted relations
       ==========
    Proccessed 5/58 sentences
    Proccessed 10/58 sentences


       === Extracted Relation ===
       Tokens: ['founder', 'of', 'Microsoft', ',', 'along', 'with', 'his', 'late', 'childhood', 'friend',
'Paul', 'Allen.[2][3', ']']
       Relation: per:employee_of (Confidence: 0.856)
Subject: Paul Allen.[2][3    Object: Microsoft
       Adding to set of extracted relations
       ==========


       === Extracted Relation ===
       Tokens: ['he', 'and', 'Allen', 'founded', 'Microsoft', 'in', 'Albuquerque', ',']
       Relation: per:employee_of (Confidence: 0.988)
Subject: Allen  Object: Microsoft
       Adding to set of extracted relations
       ==========
    Proccessed 15/58 sentences


       === Extracted Relation ===

Tokens: ['He', 'stepped', 'down', 'as', 'chairman', 'of', 'the', 'board', 'of', 'Microsoft', 'in', 'February', '2014', 'and', 'assumed', 'a', 'new', 'post', 'as', 'technology', 'adviser', 'to', 'support', 'the', 'newly', 'appointed', 'CEO', 'Satya', 'Nadella.[11', ']']
        Relation: per:employee_of (Confidence: 0.997)
Subject: Satya  Object: Microsoft
        Adding to set of extracted relations
        =========
    Proccessed 20/58 sentences

        === Extracted Relation ===
        Tokens: ['Gates', 'left', 'his', 'board', 'positions', 'at', 'Microsoft', 'and', 'Berkshire', 'Hathaway', 'to', 'focus', 'on', 'his', 'philanthropic', 'efforts', 'on', 'climate', 'change', ',']
        Relation: per:employee_of (Confidence: 0.904)
Subject: Hathaway      Object: Gates
        Adding to set of extracted relations
        =========

        === Extracted Relation ===
        Tokens: ['Gates', 'left', 'his', 'board', 'positions', 'at', 'Microsoft', 'and', 'Berkshire', 'Hathaway', 'to', 'focus', 'on', 'his', 'philanthropic', 'efforts', 'on', 'climate', 'change', ',']
        Relation: per:employee_of (Confidence: 0.884)
Subject: Hathaway      Object: Microsoft
        Adding to set of extracted relations
        =========

        === Extracted Relation ===
        Tokens: ['he', 'was', 'surpassed', 'by', 'Amazon', 'founder', 'and', 'CEO', 'Jeff', 'Bezos', ',']
        Relation: per:employee_of (Confidence: 0.997)
Subject: Jeff Bezos    Object: Amazon
        Adding to set of extracted relations
        =========

        === Extracted Relation ===
        Tokens: ['he', 'was', 'surpassed', 'by', 'Amazon', 'founder', 'and', 'CEO', 'Jeff', 'Bezos', ',', 'who', 'had', 'an', 'estimated', 'net', 'worth', 'of', 'US$', '90.6', 'billion', 'compared', 'to', 'Gates', "'s", 'net', 'worth', 'of', 'US$', '89.9', 'billion', 'at', 'the', 'time.[16', ']']
        Relation: per:employee_of (Confidence: 0.987)
Subject: Jeff Bezos    Object: Gates
        Adding to set of extracted relations
        =========
    Proccessed 25/58 sentences
    Proccessed 30/58 sentences
    Proccessed 35/58 sentences

Proccessed 40/58 sentences
Proccessed 45/58 sentences
Proccessed 50/58 sentences

=== Extracted Relation ===
Tokens: ['Ballmer', 'succeeded', 'Gates', 'as', 'Microsoft', '"s", 'CEO', 'and', 'maintained',
'that', 'position', 'from', '2000', 'until', 'his', 'resignation', 'in', '2014.[45][46', ']']
Relation: per:employee_of (Confidence: 0.589)
Subject: Gates  Object: Microsoft
Adding to set of extracted relations
=========
Proccessed 55/58 sentences

Extracted annotations 32 out of total 58 sentences
Relations extracted from this website: 12 (Overall: 12)
URL (2/10): https://www.britannica.com/biography/Bill-Gates
Fetching text from url ...
successful
Trimming webpage content from 28937 to 10000 characters
Webpage length (num characters):  10000
Annotating the webpage using spacy...

Extracted 1 sentences. Processing each sentence one by one to check for presence of right pair of named entity types; if so, will run the second pipeline ...

Total # sentences = 1

    Extracted annotations 1 out of total 1 sentences

    Relations extracted from this website: 0 (Overall: 0)

URL (3/10): https://twitter.com/BillGates

Fetching text from url ...

successful

Webpage length (num characters):  511

Annotating the webpage using spacy...

Extracted 7 sentences. Processing each sentence one by one to check for presence of right pair of named entity types; if so, will run the second pipeline ...

Total # sentences = 7

    Proccessed 5/7 sentences

    Extracted annotations 0 out of total 7 sentences

    Relations extracted from this website: 0 (Overall: 0)

URL (4/10):

https://news.microsoft.com/2020/03/13/microsoft-announces-change-to-its-board-of-directors/

Fetching text from url ...

HTTP Error

403 Client Error: Forbidden for url:

https://news.microsoft.com/2020/03/13/microsoft-announces-change-to-its-board-of-directors/

URL (5/10): https://www.gatesnotes.com/

Fetching text from url ...

HTTP Error

403 Client Error: Forbidden for url: https://www.gatesnotes.com/

URL (6/10): https://www.forbes.com/profile/bill-gates/

Fetching text from url ...

successful

Webpage length (num characters):  6589

Annotating the webpage using spacy...

Extracted 31 sentences. Processing each sentence one by one to check for presence of right pair of named entity types; if so, will run the second pipeline ...

Total # sentences = 31

    Proccessed 5/31 sentences

    Proccessed 10/31 sentences


    === Extracted Relation ===

    Tokens: ['Bill', 'GatesRelated', 'People', '&', 'CompaniesWarren', 'BuffettFriendView', 'ProfileMicrosoftHolds', 'stake', 'in', 'MicrosoftView', 'ProfileHarvard', 'UniversityAttended', 'the', 'schoolView', 'ProfileSteve', 'BallmerBusiness', 'AssociateView', 'ProfileEcolabHolds', 'stake', 'in', 'EcolabView', 'ProfileSeattle', ',']

    Relation: per:employee_of (Confidence: 0.876)

Subject: Bill GatesRelated    Object: MicrosoftView ProfileHarvard UniversityAttended

Adding to set of extracted relations
==========
Proccessed 15/31 sentences
Proccessed 20/31 sentences

=== Extracted Relation ===
Tokens: ['Bill', 'Gates', 'On', 'Advising', 'OpenAI', ',', 'Microsoft', 'And', 'Why', 'AI', 'Is', '"', 'The', 'Hottest', 'Topic', 'Of', '2023'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', "'s", 'campus', ',']
Relation: per:employee_of (Confidence: 0.866)
Subject: Bill Gates    Object: Microsoft
Adding to set of extracted relations
==========

=== Extracted Relation ===
Tokens: ['The', 'Hottest', 'Topic', 'Of', '2023'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', "'s", 'campus', ',']
Relation: per:employee_of (Confidence: 0.852)
Subject: Forbes Object: Microsoft
Adding to set of extracted relations
==========

=== Extracted Relation ===
Tokens: ['Gene', 'Therapy', 'And', 'Other', 'New', 'Technologies', 'To', 'Solve', 'Global', 'ProblemsThe', 'Microsoft', 'cofounder', 'outlines', 'in', 'his', '14th', 'annual', 'letter', 'how', 'and', 'where', 'the', 'Gates', 'Foundation', 'plans', 'to', 'give', 'its', 'next', 'billions', '.']
Relation: per:employee_of (Confidence: 0.968)
Subject: Gene Therapy   Object: Microsoft
Adding to set of extracted relations
==========
Proccessed 25/31 sentences

=== Extracted Relation ===
Tokens: ['ByCarlie', 'PorterfieldFormer', 'StaffNov', '15', ',', '2022Behind', 'The', 'Billions', ':', 'Bill', 'GatesHow', 'did', 'Bill', 'Gates', ',']
Relation: per:employee_of (Confidence: 0.667)
Subject: Bill GatesHow  Object: ByCarlie PorterfieldFormer StaffNov
Adding to set of extracted relations
==========

=== Extracted Relation ===
Tokens: ['Bill', 'GatesHow', 'did', 'Bill', 'Gates', ',', 'the', 'world', "'s", 'most', 'generous', 'philanthropist', 'and', 'founder', 'of', 'Microsoft', ',']

Relation: per:employee_of (Confidence: 0.927)
Subject: Bill GatesHow  Object: Microsoft
Adding to set of extracted relations
==========
Proccessed 30/31 sentences

Extracted annotations 15 out of total 31 sentences
Relations extracted from this website: 6 (Overall: 6)
URL (7/10): https://www.linkedin.com/in/williamhgates
Fetching text from url ...
successful
Webpage length (num characters):  3
Annotating the webpage using spacy...
Extracted 1 sentences. Processing each sentence one by one to check for presence of right pair
of named entity types; if so, will run the second pipeline ...
Total # sentences = 1
Extracted annotations 0 out of total 1 sentences
Relations extracted from this website: 0 (Overall: 0)
URL (8/10):
https://www.forbes.com/sites/alexkonrad/2023/02/06/bill-gates-openai-microsoft-ai-hottest-topic-
2023/
Fetching text from url ...
successful
Trimming webpage content from 11990 to 10000 characters
Webpage length (num characters):  10000
Annotating the webpage using spacy...
Extracted 99 sentences. Processing each sentence one by one to check for presence of right
pair of named entity types; if so, will run the second pipeline ...
Total # sentences = 99

=== Extracted Relation ===
Tokens: ['2023,06:30am', 'EST|Share', 'to', 'FacebookShare', 'to', 'TwitterShare', 'to',
'LinkedinBill', 'Gates', ',', 'Co', '-', 'chair', ',', 'Bill', '&', 'Melinda', 'Gates', 'FoundationJOHN',

'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI',
'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
     Relation: per:employee_of (Confidence: 0.899)
Subject: AI    Object: FacebookShare
     Adding to set of extracted relations
     ==========

     === Extracted Relation ===
     Tokens: ['2023,06:30am', 'EST|Share', 'to', 'FacebookShare', 'to', 'TwitterShare', 'to',
'LinkedinBill', 'Gates', ',', 'Co', '-', 'chair', ',', 'Bill', '&', 'Melinda', 'Gates', 'FoundationJOHN',
'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI',
'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
     Relation: per:employee_of (Confidence: 0.899)
Subject: Microsoft    Object: FacebookShare
     Adding to set of extracted relations
     ==========

     === Extracted Relation ===
     Tokens: ['2023,06:30am', 'EST|Share', 'to', 'FacebookShare', 'to', 'TwitterShare', 'to',
'LinkedinBill', 'Gates', ',', 'Co', '-', 'chair', ',', 'Bill', '&', 'Melinda', 'Gates', 'FoundationJOHN',
'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI',
'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
     Relation: per:employee_of (Confidence: 0.781)
Subject: Forbes Object: TwitterShare
     Adding to set of extracted relations
     ==========

     === Extracted Relation ===
     Tokens: ['2023,06:30am', 'EST|Share', 'to', 'FacebookShare', 'to', 'TwitterShare', 'to',
'LinkedinBill', 'Gates', ',', 'Co', '-', 'chair', ',', 'Bill', '&', 'Melinda', 'Gates', 'FoundationJOHN',
'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI',
'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
     Relation: per:employee_of (Confidence: 0.993)
Subject: Forbes Object: LinkedinBill Gates
     Adding to set of extracted relations
     ==========

     === Extracted Relation ===
     Tokens: ['2023,06:30am', 'EST|Share', 'to', 'FacebookShare', 'to', 'TwitterShare', 'to',
'LinkedinBill', 'Gates', ',', 'Co', '-', 'chair', ',', 'Bill', '&', 'Melinda', 'Gates', 'FoundationJOHN',
'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI',
'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
     Relation: per:employee_of (Confidence: 0.916)
Subject: AI    Object: LinkedinBill Gates

Adding to set of extracted relations
==========


=== Extracted Relation ===
Tokens: ['2023,06:30am', 'EST|Share', 'to', 'FacebookShare', 'to', 'TwitterShare', 'to', 'LinkedinBill', 'Gates', ',', 'Co', '-', 'chair', ',', 'Bill', '&', 'Melinda', 'Gates', 'FoundationJOHN', 'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
        Relation: per:employee_of (Confidence: 0.916)
Subject: Microsoft      Object: LinkedinBill Gates
        Adding to set of extracted relations
        ==========


=== Extracted Relation ===
Tokens: ['Melinda', 'Gates', 'FoundationJOHN', 'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
        Relation: per:employee_of (Confidence: 0.997)
Subject: Forbes Object: Microsoft
        Adding to set of extracted relations
        ==========


=== Extracted Relation ===
Tokens: ['Melinda', 'Gates', 'FoundationJOHN', 'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
        Relation: per:employee_of (Confidence: 0.964)
Subject: Microsoft      Object: AI
        Adding to set of extracted relations
        ==========


=== Extracted Relation ===
Tokens: ['Melinda', 'Gates', 'FoundationJOHN', 'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']
        Relation: per:employee_of (Confidence: 0.712)
Subject: AI     Object: Microsoft
        Adding to set of extracted relations
        ==========


=== Extracted Relation ===
Tokens: ['Melinda', 'Gates', 'FoundationJOHN', 'KEATLEY', 'The', 'Microsoft', 'cofounder', 'talked', 'to', 'Forbes', 'about', 'his', 'work', 'with', 'AI', 'unicorn', 'OpenAI', 'and', 'back', 'on', 'Microsoft', ''s', 'campus', ',']

Relation: per:employee_of (Confidence: 0.882)
Subject: Forbes Object: AI
Adding to set of extracted relations
==========

=== Extracted Relation ===
Tokens: ['Bill', 'Gates', 'left', 'the', 'board', 'of', 'directors', 'of', 'Microsoft', ',']
Relation: per:employee_of (Confidence: 0.975)
Subject: Bill Gates    Object: Microsoft
Adding to set of extracted relations
==========
Proccessed 5/99 sentences
Proccessed 10/99 sentences
Proccessed 15/99 sentences

=== Extracted Relation ===
Tokens: ['And', 'I', 'got', 'to', 'know', 'Greg', '[', 'Brockman', ']', 'through', 'OpenAI', 'and', 'some', 'of', 'the', 'other', 'people', 'there', ',', 'like', 'Ilya', '[', 'Sutskever', ',', 'Brockman', ''s', 'cofounder', 'and', 'chief', 'scientist', ']']
Relation: per:employee_of (Confidence: 0.676)
Subject: Greg   Object: Brockman
Adding to set of extracted relations
==========
Proccessed 20/99 sentences
Proccessed 25/99 sentences
Proccessed 30/99 sentences
Proccessed 35/99 sentences
Proccessed 40/99 sentences
Proccessed 45/99 sentences
Proccessed 50/99 sentences

=== Extracted Relation ===
Tokens: ['Rodney', 'Brooks', '[', 'a', 'professor', 'emeritus', 'at', 'MIT', 'and', 'robotics', 'entrepreneur', ']']
Relation: per:employee_of (Confidence: 0.996)
Subject: Rodney Brooks  Object: MIT
Adding to set of extracted relations
==========
Proccessed 55/99 sentences
Proccessed 60/99 sentences
Proccessed 65/99 sentences
Proccessed 70/99 sentences

=== Extracted Relation ===

Tokens: ['Satya', '[', 'Nadella', ',', 'Microsoft', "'s", 'CEO', ']']
Relation: per:employee_of (Confidence: 0.781)
Subject: Nadella     Object: Microsoft
Adding to set of extracted relations
==========
Proccessed 75/99 sentences
Proccessed 80/99 sentences
Proccessed 85/99 sentences
Proccessed 90/99 sentences
Proccessed 95/99 sentences

Extracted annotations 12 out of total 99 sentences
Relations extracted from this website: 14 (Overall: 14)
URL (9/10):
https://www.wsj.com/articles/microsoft-directors-decided-bill-gates-needed-to-leave-board-due-to-prior-relationship-with-staffer-11621205803
Fetching text from url ...

HTTP Error
403 Client Error: Forbidden for url:
https://www.wsj.com/articles/microsoft-directors-decided-bill-gates-needed-to-leave-board-due-to-prior-relationship-with-staffer-11621205803
URL (10/10): https://www.gatesnotes.com/Bio
Fetching text from url ...
HTTP Error
403 Client Error: Forbidden for url: https://www.gatesnotes.com/Bio

================== ALL RELATIONS for Work_For ( 10 ) =================
Confidence: 0.9970707893371582          | Subject: Satya          | Object: Microsoft
Confidence: 0.9970470070838928          | Subject: Jeff Bezos          | Object: Amazon
Confidence: 0.9967542290687561          | Subject: Forbes          | Object: Microsoft
Confidence: 0.9967000484466553          | Subject: active1972          | Object: Microsoft
Confidence: 0.9964101314544678          | Subject: active1972          | Object: Bill & Melinda Gates
Confidence: 0.9956853985786438          | Subject: Rodney Brooks          | Object: MIT
Confidence: 0.9928909540176392          | Subject: Forbes          | Object: LinkedinBill Gates
Confidence: 0.9881677627563477          | Subject: Allen          | Object: Microsoft
Confidence: 0.9872738122940063          | Subject: Jeff Bezos          | Object: Gates
Confidence: 0.9753335118293762          | Subject: Bill Gates          | Object: Microsoft
Total # of iterations = 1