**Evaluation Set**

**Query 1:** Applications where Machine Learning cannot be used

Description: I want to know some of the problems that are faced in machine learning and impossible to use and areas where machine learning does a bad job and some of the limitations of machine learning compared to humans.

Link rank wise:

1. https://towardsdatascience.com/the-limitations-of-machine-learning-a00e0c3040c6
2. http://www.onlydeadfish.co.uk/only\_dead\_fish/2017/01/the-limitations-of-machine-learning.html
3. https://www.quora.com/What-are-the-problems-that-cannot-be-solved-by-Machine-Learning
4. https://www.sciencealert.com/ai-machine-learning-solve-all-humanity-problems-unrealistic
5. https://www.ishir.com/blog/4540/machine-learning-can-do-and-cant-do.htm
6. https://thenewstack.io/what-machine-learning-can-and-cant-do/
7. https://www.dmnews.com/data/article/13035221/what-machine-learning-can-and-cant-do
8. https://www.wired.com/story/greedy-brittle-opaque-and-shallow-the-downsides-to-deep-learning/
9. https://marutitech.com/problems-solved-machine-learning/
10. https://elitedatascience.com/machine-learning-impact

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,1,2,0,4,2,1,0,0]

NDCG@10 for Human Judgement: 0.933591567346848

BM25 Rank: [5, 2, 1, 10, 6, 4, 3, 7, 8, 9]

NDCG@10 for BM25: 0.780259120455989

Query Likelihood Jelinek mercer smoothing ranking: [3, 2, 4, 7, 9, 8, 5, 6, 1, 10]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.942131430393038

**Query 2:** Information retrieval and data science

Description: I want to know what Information retrieval and data science means and the difference between them. I would also like to get link where I can purchase few books that are related to information retrieval and data science

Link rank wise:

1. https://en.wikipedia.org/wiki/Information\_retrieval
2. https://en.wikipedia.org/wiki/Data\_science
3. https://www.kdnuggets.com/tag/information-retrieval
4. https://www.quora.com/What-is-the-difference-between-information-retrieval-and-data-mining-How-is-big-data-related-to-these-two-different-techniques
5. https://www.quora.com/What-is-Information-Retrieval-How-related-is-it-to-data-analytics-and-machine-learning
6. http://www.padakuu.com/article/303-data-mining-and-information-retrieval
7. https://encyclopedia2.thefreedictionary.com/Information+Retrieval
8. https://trello.com/c/YyktHp9L/22-introduction-to-information-retrieval
9. https://www.elte.hu/en/data-mining-and-information-retrieval
10. https://link.springer.com/chapter/10.1007/978-3-642-36981-0\_44

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [2,1,1,0,3,1,0,1,3,1]

NDCG@10 for Human Judgement: 0.797803829616256

BM25 Rank: [5,8,3,1,2,6,4,10,9,7]

NDCG@10 for BM25: 0.695195052023416

Query Likelihood Jelinek mercer smoothing ranking: [5, 2, 8, 7, 3, 6, 1, 10, 9, 4]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.835953184770819

**Query 3:** Citizenship amendment bill

Description: I want to know what Citizenship amendment bill is. If there were any protest when the bill was passed. Along with this I want to know places where riots happened when the bill was passed and is the government taking any action in maintaining peace.

Links rank wise:

1. https://www.ndtv.com/india-news/in-citizenship-amendment-bill-tough-rules-for-overseas-indians-oci-2143696
2. https://economictimes.indiatimes.com/news/politics-and-nation/citizenship-amendment-triple-talaq-bills-lapse/articleshow/69524686.cms?from=mdr
3. https://www.quora.com/What-is-the-Citizenship-Amendment-Act
4. https://www.washingtonpost.com/world/asia\_pacific/india-poised-to-pass-controversial-citizenship-law-excluding-muslim-migrants/2019/12/11/ebda6a7e-1b71-11ea-977a-15a6710ed6da\_story.html
5. https://www.bbc.com/news/world-asia-india-50670393
6. https://time.com/5746688/india-citizenship-amendment-bill/
7. https://www.dw.com/en/india-parliament-passes-citizenship-amendment-bill/a-51584685
8. https://gulfnews.com/photos/news/india-no-muslims-citizenship-amendment-bill-explained-1.1575963281743
9. https://www.business-standard.com/article/politics/parliament-winter-session-live-updates-citizenship-amendment-bill-debate-in-rajya-sabha-northeast-protests-119121100124\_1.html
10. <https://www.ndtv.com/india-news/parliament-winter-session-live-updates-citizenship-bill-in-rajya-sabha-today-amid-protests-2146865>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,0,4,2,4,3,2,3,3,3]

NDCG@10 for Human Judgement: 0.900742761954464

BM25 Rank: [4,6,1,10,9,8,3,2,7,5]

NDCG@10 for BM25: 0.845845030520504

Query Likelihood Jelinek mercer smoothing ranking: [6, 5, 3, 10, 9, 1, 8, 7, 4, 2]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking:

**Query 4:** laptops with processing/computing power

**Description:** I want to know the laptops which has highest processing and computing power and also the cost of those laptops and ecommerce websites where I can buy the same. I also want to know specifications of any laptops that will be released in future

Links rank wise:

1. https://www.laptopmag.com/benchmarks/cpu-performance
2. https://www.techradar.com/news/mobile-computing/laptops/best-laptops-1304361
3. https://www.creativebloq.com/buying-guides/most-powerful-laptops
4. https://www.dummies.com/consumer-electronics/tablets/for-seniors-laptop-buying-decisions-processor-speed-and-memory/
5. https://www.razer.com/gaming-laptops/razer-blade/windows?utm\_source=google&utm\_medium=search-generic&utm\_campaign=011019\_RS\_SYS\_BTM\_US\_EGR-blade15\_TR&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nPS3Oti-T\_rxGsnXdNCcU5mQAjjQkI0OmpTFz7eGVVr-L\_e3rZCtQxoCjA4QavD\_BwE
6. https://store.google.com/us/product/pixelbook\_go?sku=\_pixelbook\_go\_intel\_core\_i5\_16gb\_ram\_128gb\_black&gclsrc=aw.ds&&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nOAYkLg5D8fWXYczjkMPU3\_7xA3Lo\_yKkq8ComJN-FmtN-vCEgEavhoCq38QavD\_BwE
7. https://www.dell.com/en-us/shop/cty/pdp/spd/xps-13-7390-laptop/xn7390dsruh?mkwid=siYpN9S2O&pcrid=51916301508&pdv=c&product=XN7390DSRUH&pgrid=10482906588&ptaid=aud-339243926551:pla-788832048231&VEN1=siYpN9S2O~51916301508~901pdb6671~c~~XN7390DSRUH~10482906588~aud-339243926551:pla-788832048231&&dgc=st&dgseg=dhs&acd=1230980731501410&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nMFNMWp9H191JrjfId7Z0k1DRzkFFKnQVuj6W\_vFAhcYKeb8iZ7\_QboClO4QavD\_BwE
8. https://www.google.com/search?q=laptops+with+processing/computing+power&client=safari&rls=en&sxsrf=ACYBGNQIF6g2Evd9e6\_WQ5TFR3COVnPpSw:1576094292347&ei=VErxXc3pFOXt5gLy2ZUg&start=40&sa=N&ved=2ahUKEwjN47XjsK7mAhXltlkKHfJsBQQ4ChDy0wN6BQgMEMkC&biw=1279&bih=653
9. https://www.bestreviews.guide/laptops?&origin=google&google\_params[matchtype]=b&google\_params[network]=g&google\_params[device]=c&google\_params[creative]=398149100848&google\_params[keyword]=&google\_params[adposition]=1o2&google\_params[adgroupid]=81747084942&google\_params[campaignid]=8162031975&bs=&google\_params[feeditemid]=&google\_params[targetid]=dsa-41967981854&google\_params[loc\_interest\_ms]=&google\_params[loc\_physical\_ms]=1018127&google\_params[devicemodel]=&google\_params[target]=&new\_api=true&dest=0&sys\_id=0|254&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nIlGXaMi-qpyfhG3vUPXXTZ7QbmAk7F2PCx-V9aVOppyjqYichoqBBoCAnYQAvD\_BwE
10. https://www.tomsguide.com/best-picks/best-laptops

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,3,2,1,2,2,3,2,3]

NDCG@10 for Human Judgement: 0.975617830234574

BM25 Rank: [3, 2, 4, 9, 7, 10, 8, 1, 6, 5]

NDCG@10 for BM25: 0.957300595986501

Query Likelihood Jelinek mercer smoothing ranking: [8, 5, 2, 1, 7, 9, 3, 6, 10, 4]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.966856023909087

**Query 5:** Things to do to de-stress while having lot of stress

Description: I want to know why we take stress, different ways to make sure I won’t get stressed. I also want to know different way where I can de-stress when I am at most stress.

Links rank wise:

1. https://www.virtua.org/articles/10-quick-ways-to-de-stress
2. https://www.entrepreneur.com/article/296344
3. https://www.healthline.com/nutrition/16-ways-relieve-stress-anxiety
4. https://www.health.harvard.edu/heart-health/5-ways-to-de-stress-and-help-your-heart
5. https://www.womenshealthmag.com/health/a19904835/de-stress-instantly/
6. https://10faq.com/health/stress-symptoms/?gclid=CjwKCAiAxMLvBRBNEiwAKhr-nMiPGCdlHErc\_xQ3r5K1xSd6taCBiTM6LP8wU-9P0kdp7cx889ojERoCDpcQAvD\_BwE
7. https://www.outofstress.com/things-stress-relief/
8. https://www.themuse.com/advice/how-to-deal-when-youre-too-stressed-to-destress
9. https://www.nbcnews.com/better/health/daily-ritual-will-help-you-de-stress-just-5-minutes-ncna878391
10. <https://www.lifehack.org/articles/lifestyle/40-simple-and-brilliant-ways-relax-and-stress.html>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,3,2,3,2,3,4,3,3]

NDCG@10 for Human Judgement: 0.952332441975407

BM25 Rank: [9, 2, 8, 5, 6, 10, 1, 7, 3, 4]

NDCG@10 for BM25: 0.924087157148951

Query Likelihood Jelinek mercer smoothing ranking: [3, 6, 9, 1, 5, 8, 10, 4, 2, 7]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.921503104195604

**Query 6**: Places to visit during winter

Description: I want to know different places which are famous and a must visit place in winter that are around Boston. I would also like to know different places across different countries which are famous in winter

Link rank wise:

1. https://www.boston-discovery-guide.com/boston-winter-activities.html
2. https://www.planetware.com/usa/best-winter-vacations-in-the-us-us-co-89.htm
3. https://www.mentalfloss.com/article/75361/15-worlds-most-stunning-winter-destinations
4. https://www.pandotrip.com/top-10-best-cities-to-visit-in-winter-14422/
5. https://www.visitwhitemountains.com/attractions/attractions?gclid=CjwKCAiAxMLvBRBNEiwAKhr-nL8LV1LUeDJtuKd0kVzJxsD8zrxZpm0Ki9RSHPZz92zA35AIjeL5QhoCSOQQAvD\_BwE
6. https://www.israel.travel/?gclid=CjwKCAiAxMLvBRBNEiwAKhr-nCz9DMhLjD1zi\_97T2q-8a1ZhYmtkkPbFF2hkC1vh7xGPjB8PGjWmBoC1LkQAvD\_BwE
7. https://www.lonelyplanet.com/articles/best-winter-destinations-europe
8. https://www.tosomeplacenew.com/winter-destinations-in-usa/
9. https://www.fodors.com/news/photos/top-15-beach-destinations-for-winter-escapes
10. https://www.tourmyindia.com/blog/places-one-can-visit-winter-india/

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,2,2,4,1,2,4,2,2]

NDCG@10 for Human Judgement: 0.946324563347279

BM25 Rank: [5, 3, 7, 4, 8, 10, 9, 2, 6, 1]

NDCG@10 for BM25: 0.886881063049172

Query Likelihood Jelinek mercer smoothing ranking: [5, 4, 2, 10, 1, 3, 7, 9, 6, 8]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.938218692844316

**Query 7**: which is the best company to work for google or amazon

Description: I want to know the work culture of Google and Amazon, glassdoor reviews of employees who is working in Google and amazon. A link which discusses the pros and cons of both the companies and gives me a clean picture of which is a better company to work interms of money and stress.

Link rank wise:

1. https://www.quora.com/Between-Google-and-Amazon-which-company-is-better-to-work-for-as-a-software-engineer-Why
2. https://towardsdatascience.com/analyzing-employee-reviews-google-vs-amazon-vs-apple-vs-microsoft-4dc3c036666b
3. https://qz.com/work/1236944/linkedin-amazon-is-a-better-place-to-work-than-google-apple-or-tesla/
4. https://www.usatoday.com/story/money/careers/2019/10/03/top-companies-perks-microsoft-facebook-google-top-comparably-list/3838377002/
5. https://www.marketwatch.com/story/google-is-no-longer-the-top-company-in-this-ranking-of-best-places-to-work-2018-03-21
6. https://www.investopedia.com/articles/investing/060315/top-10-reasons-work-google.asp
7. https://www.diversityinsteam.com/2018/03/three-traits-hired-google-amazon-top-companies/
8. https://www.livemint.com/companies/news/google-facebook-drop-out-of-list-of-top-10-best-places-to-work-11576044072529.html
9. https://emerj.com/ai-executive-guides/ai-advantage-tech-giants-amazon-facebook-google/
10. https://www.smarter.com/ar?q=best+tech+companies+to+work+for&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nN9iER3hmkq3jN0AqG\_pG5SWy-IHoTgVcinqPckf0dX9WGI\_fcDPsRoCH3AQAvD\_BwE

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,3,3,4,2,1,2,3,4]

NDCG@10 for Human Judgement: 0.973430979546956

BM25 Rank: [1, 4, 6, 10, 7, 5, 2, 9, 3, 8]

NDCG@10 for BM25: 0.917503840943215

Query Likelihood Jelinek mercer smoothing ranking: [2, 8, 4, 6, 5, 1, 3, 9, 10, 7]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.959000331553879

**Query 8**: Deep learning mit

Description: I want to know what deep learning means. Different websites such as coursera, udemy where deep learning courses from mit is been offered. I also would like to know the course structure of mit for deep learning and the professor who teaches this course.

Link rank wise:

1. https://medium.com/tensorflow/mit-6-s191-introduction-to-deep-learning-24994d705aca
2. https://deeplearning.mit.edu
3. https://bumetprograms.bu.edu/applied-data-analytics/?utm\_source=google&utm\_medium=cpc&utm\_campaign=CIS-DADataAnalyticsRelated-Regional&utm\_content=DeepLearning&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nGuix78jop0g285IbhfWbXIrr17RmemeWmt8RJXuHqFJ1nLLtGlTsxoCplwQAvD\_BwE
4. http://introtodeeplearning.com
5. https://www.technologyreview.com/g/deep-learning/
6. https://www.tibco.com/products/data-science?utm\_medium=cpc&utm\_source=google&utm\_content=s&utm\_campaign=ggl\_s\_nam\_en\_DS\_nonbrand\_beta&utm\_term=%2Bmachine%20%2Blearning&\_bt=391695114191&\_bm=b&\_bn=g&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nK8FobgZwwKvhKh8lbxIQt1KxioMmL4IROTTvoThzd0xUp\_6DLVmWhoC7k0QAvD\_BwE
7. http://machinelearning.mit.edu
8. https://www.coursera.org/specializations/deep-learning
9. https://learning.udacity.com/deep-learning/?utm\_source=gsem\_generic&utm\_medium=ads\_n&utm\_campaign=6655797358\_c&utm\_term=77776273383\_nam&utm\_keyword=deep%20learning%20coursera\_e&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nLme4SxGN73RkRsCSxwd4T2kkeqTn6kX1SZ1bZ05BYl46kcmI\_PA8xoChykQAvD\_BwE
10. https://www.coursera.org/?utm\_source=gg&utm\_medium=sem&utm\_content=01-BrandedSearch-US&campaignid=380484307&adgroupid=55736931067&device=c&keyword=coursera%20specialization%20courses&matchtype=b&network=g&devicemodel=&adpostion=1t2&creativeid=322364986271&hide\_mobile\_promo&gclid=CjwKCAiAxMLvBRBNEiwAKhr-nNOo6lWyDJnMCv2QP5iU0ejoWA7Fa5\_88EeEfCa4Jyh1rO4icLDuqBoCsy0QAvD\_BwE

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,4,0,4,2,0,1,3,1,0]

NDCG@10 for Human Judgement: 0.890703537545622

BM25 Rank: [2, 8, 9, 4, 3, 6, 10, 1, 5, 7]

NDCG@10 for BM25: 0.886286039673163

Query Likelihood Jelinek mercer smoothing ranking: [9, 8, 1, 7, 6, 10, 4, 3, 5, 2]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.767027249902005

**Query 9**: Arya Stark

Description: I want to know about the character Arya Stark in a tv show Game of Thrones. I also want to know arya stark’s real name, age and the number of followers she has on twitter, facebook and Instagram. I would also like to know if she is planning to do any new movies or tv shows.

Link rank wise:

1. https://en.wikipedia.org/wiki/Arya\_Stark
2. https://scatteredquotes.com/characters/arya-stark/
3. https://www.ign.com/wikis/game-of-thrones/Arya\_Stark
4. https://www.amazon.com/s?k=arya+stark&hvadid=78546480966192&hvbmt=be&hvdev=c&hvqmt=e&tag=mh0b-20&ref=pd\_sl\_9skrrfpov\_e
5. https://www.ebay.com/sch/i.html?\_nkw=arya+stark&ul\_noapp=true
6. https://www.etsy.com/market/arya\_stark
7. https://www.hbo.com/game-of-thrones/cast-and-crew/arya-stark/
8. https://hieloyfuego.fandom.com/wiki/Arya\_Stark
9. https://www.imdb.com/title/tt10136000/
10. https://www.ebay.com/sch/i.html?\_nkw=arya+stark&ul\_noapp=true

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,2,3,2,4,2,3,3,4,3]

NDCG@10 for Human Judgement: 0.945696172614896

BM25 Rank: [5, 6, 7, 4, 1, 3, 8, 9, 10, 2]

NDCG@10 for BM25: 0.933703994323083

Query Likelihood Jelinek mercer smoothing ranking: [2, 4, 7, 5, 9, 8, 1, 3, 10, 6]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.918860897106875

**Query 10**: Where the mind is without fear

Description: I want to link about the poem written by Rabindranath Tagore. The meaning of the poem in different languages. I also would like to know if anyone has explain the poem precisely and some ecommerce links where I can buy this poem

Link rank wise:

1. https://allpoetry.com/where-the-mind-is-without-fear
2. https://www.poetryfoundation.org/poems/45668/gitanjali-35
3. https://www.huffpost.com/entry/indias-greatest-economist\_b\_3920538
4. https://www.amazon.com/WHERE-MIND-WITHOUT-FEAR-RABINDRANATH/dp/B0765VDXM2
5. http://www.conversationsmagazine.org/columns/2019/2/12/where-the-mind-is-without-fear
6. https://www.researchgate.net/publication/332833404\_%27Where\_the\_Mind\_is\_Without\_Fear%27\_as\_a\_tool\_for\_teaching\_essay\_writing\_to\_college\_students
7. https://www.academia.edu/15919756/Rabindranath\_Tagore\_s\_Where\_the\_Mind\_is\_Without\_Fear\_A\_Poem\_with\_Genuine\_Concern\_for\_the\_Humanities
8. https://englicist.com/notes/summary-where-the-mind-is-without-fear-rabindranath-tagore
9. https://www.amazon.com/Mind-Without-Fear-Rajat-Gupta-ebook/dp/B07PN6N16T
10. https://www.kobo.com/ww/en/ebook/mind-without-fear

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,4,4,4,2,3,3,0,0]

NDCG@10 for Human Judgement: 0.997188903594420

BM25 Rank: [4, 6, 5, 10, 1, 2, 8, 3, 7, 9]

NDCG@10 for BM25: 0.935561778137518

Query Likelihood Jelinek mercer smoothing ranking: [1, 9, 10, 7, 4, 2, 6, 5, 3, 8]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.970454053507680

**Query 11:** How to replace column values in a dataframe in rpython

Description: I want to know different ways how I can replace a column value dataframe in R language and Python language. Along with this I want multiple stack overflow links which has answers of ways of solving it.

Link rank wise:

1. https://stackoverflow.com/questions/11817371/replace-numbers-in-data-frame-column-in-r
2. https://www.geeksforgeeks.org/python-pandas-dataframe-replace/
3. https://pandas.pydata.org/pandas-docs/stable/reference/api/pandas.DataFrame.replace.html
4. https://stackoverflow.com/questions/23307301/replacing-column-values-in-a-pandas-dataframe
5. http://pytolearn.csd.auth.gr/b4-pandas/40/moddfcols.html
6. http://queirozf.com/entries/pandas-dataframe-replace-examples
7. https://www.python-course.eu/pandas\_replacing\_values.php
8. https://thispointer.com/python-pandas-access-and-change-column-names-row-indexes-in-dataframe/
9. https://www.w3resource.com/python-exercises/pandas/python-pandas-data-frame-exercise-17.php
10. https://www.edureka.co/community/43220/how-to-change-update-cell-value-in-python-pandas-dataframe

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [0,4,4,3,2,2,3,0,4,0]

NDCG@10 for Human Judgement: 0.769380010049027

BM25 Rank: [5, 6, 3, 1, 10, 7, 4, 2, 9, 8]

NDCG@10 for BM25: 0.722780684855447

Query Likelihood Jelinek mercer smoothing ranking: [4, 9, 7, 5, 3, 8, 1, 6, 10, 2]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.794391445956638

**Query 12:** New players to watch for in premier league

Description: I want to know the list of young players who are below 20 years of age and are performing really well in premier league. New players are recently got transferred from one club to another and performing really well.

Link rank wise:

1. https://www.sportingnews.com/us/soccer/news/premier-league-players-to-watch-2019-20/1cjf17w2d3k6m1ntiohr3nda7r
2. https://footyaccumulators.com/news/5-players-to-watch-in-the-premier-league-next-season
3. https://www.forbes.com/sites/cybrown/2019/08/08/top-15-english-premier-league-players-entering-the-2019-20-season/#4e3aa92c29bf
4. https://en.wikipedia.org/wiki/Premier\_League
5. https://www.90min.com/posts/6425952-fantasy-premier-league-7-must-have-players-for-your-2019-20-team
6. https://soccer.nbcsports.com/2019/08/05/top-10-premier-league-players-at-each-position/
7. https://www.theguardian.com/football/ng-interactive/2019/oct/09/next-generation-2019-20-of-the-best-talents-at-premier-league-clubs
8. https://www.sportskeeda.com/football/fantasy-premier-league-fpl-2018-19-5-new-players-watch-out-ss
9. https://www.foxsports.com/soccer/story/premier-league-2018-19-5-new-signings-to-watch-out-for-080618
10. https://www.goal.com/story/premier-league-2017-18-preview-special/

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,4,3,2,3,2,3,4,4,0]

NDCG@10 for Human Judgement: 0.926187139501440

BM25 Rank: [8, 1, 7, 6, 3, 4, 10, 2, 9, 5]

NDCG@10 for BM25: 0.913584072937766

Query Likelihood Jelinek mercer smoothing ranking:[ 5, 4, 8, 7, 3, 10, 9, 6, 1, 2]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.979082881940837

**Query 13:** Sneezing and cold

Description: I want to know over the counter medicines that are available fore sneezing and cold. I also want to know how is cold and sneezing caused, after effects of the same and how home remedies to stop cold and sneezing.

Rank Link wise:

1. https://www.verywell.com/sneezing-causes-treatments-83144
2. https://www.healthline.com/health/common-cold-symptoms
3. https://vicks.com/en-us/symptom/sneezing
4. https://www.webmd.com/allergies/cold-or-allergy#1
5. https://ohsonline.com/articles/2011/04/03/is-sneezing-a-sign-of-a-cold-or-allergies.aspx
6. https://healthprep.com/cold-flu-cough/myths-and-facts-about-the-common-cold-and-flu-you-need-to-know-right-now/?utm\_source=bing&utm\_medium=search&utm\_campaign=267633337&utm\_content=1273234750206076&utm\_term=sneezing%20cold&msclkid=eaf4d04331fe1eeb7fcc8db26d53b41c
7. https://www.knowyourotcs.org/decoding-the-symptoms-common-colds-vs-allergies/
8. https://www.everydayhealth.com/cold-flu/treatment/your-day-to-day-guide-to-the-common-cold/
9. https://www.tylenol.ca/symptoms/Upper-Respiratory/cold-flu/runny-nose-during-cold-season
10. https://health.clevelandclinic.org/how-can-i-tell-seasonal-allergies-from-a-cold/

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [1,2,4,3,2,0,4,2,4,1]

NDCG@10 for Human Judgement: 0.777514437671469

BM25 Rank: [3, 9, 1, 5, 4, 10, 8, 7, 2, 6]

NDCG@10 for BM25: 0.648144239568049

Query Likelihood Jelinek mercer smoothing ranking: [9, 1, 8, 7, 2, 6, 3, 10, 4, 5]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.870466230017740

**Query 14:** Premier league stats for 2019

Description: I would like to see the current standing of the different soccer teams for this year. Along with this I would like to see highest number of goals scored by the team and player, assists. Along with I would like to see if there were any new records that were made in the year 2019

Links rank wise:

1. https://www.premierleague.com/stats
2. https://www.premierleague.com/stats/top/players/goals
3. https://www.espn.com/soccer/stats/\_/league/eng.1
4. https://footystats.org/england/premier-league
5. https://www.espn.com/cricket/story/\_/id/28274845/stats-kohli-fastest-fifty-wankhede-highest-t20i-total?platform=amp
6. https://www.foxsports.com/soccer/stats?competition=1&season=20190&category=OVERALL&sort=-1&sortOrder=0&page=1
7. https://www.premierleague.com/matchweek/4292/blog
8. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwiLmJzf2K7mAhXDdN8KHV54Bo0QFjACegQIBBAB&url=https%3A%2F%2Ffbref.com%2Fen%2Fcomps%2F9%2FPremier-League-Stats&usg=AOvVaw3\_AUEygNUdaRBlNqpZ1Ldb
9. https://www.sportsmole.co.uk/football/premier-league/2019-20/
10. <https://www.timesnownews.com/sports/football/article/manchester-united-vs-chelsea-premier-league-2019-20-live-streaming-preview-team-news-starting-xi/466973>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,3,4,0,3,3,1,4,1]

NDCG@10 for Human Judgement: 0.951055115029623

BM25 Rank: [5, 4, 8, 1, 7, 9, 6, 10, 3, 2]

NDCG@10 for BM25: 0.927981013172245

Query Likelihood Jelinek mercer smoothing ranking: [3, 10, 1, 9, 4, 2, 7, 8, 6, 5]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.770376721663771

**Query 15:** Weather update in Boston for the next 10 days

Description: I would like to see the weather update for today, tomorrow and the next 10 days with updates like rain, snow, highest temperature and lowest temperature for each day. I would also like to know counter measure such as stay at home if there is any severe storm.

Links rank wise:

1. https://weather.com/weather/tenday/l/Boston+MA?canonicalCityId=6320cadd3d539b434b5a45c094becf3edbe8ea88958185a2287a801115c9ae30
2. https://www.wunderground.com/forecast/us/ma/boston
3. https://weather.com/weather/today/l/Boston+MA?canonicalCityId=6320cadd3d539b434b5a45c094becf3edbe8ea88958185a2287a801115c9ae30
4. https://r.search.yahoo.com/cbclk/dWU9QkI1RjUyRDY3QUNFNDI5MCZ1dD0xNTc2MDkyOTQwMjYwJnVvPTczMTg2MzU1NzU4Njk1Jmx0PTImcz0yJmVzPXJQQW11ZDRHUFM4YkZIazM0bTZrZFBUY3NBVUJiVm9saEdmMVpScldwX0tKcU5RLQ--/RV=2/RE=1576121740/RO=10/RU=https%3a%2f%2fwww.bing.com%2faclick%3fld%3de3bFgexmv2CNXNNe8C65h1XzVUCUw3cHYXbFCmPlkZJpX-UiG2htieffoLIBtsNeqWs7\_QQz5i\_fixXKwUSJGCoDbCwTrVZ1HR\_YZDS02eI0fh1Q1AhlhzM6l7DEH066lpmxV5wiNodc8lp047h6jpo-yTJ8m703HtSJ2sFsTzGxdM6rNt%26u%3daHR0cHMlM2ElMmYlMmZ3ZWF0aGVyLmNvbSUzZmNtX3ZlbiUzZFBTX0JJX0RNQV8wNDAxMjAxOV8xJTI2cGFyJTNkTUtfQklORw%26rlid%3db2bb1314e57215f919694ee5a07e8b4a/RK=2/RS=kGaboQWiwQqP.GmlFrSg.yK9ZVc-
5. https://www.weatherbug.com/weather-forecast/10-day-weather/boston-ma-02111
6. https://www.timeanddate.com/weather/usa/boston/ext
7. https://www.theweather.com/boston-c10379.htm
8. https://www.sitesinformation.com/search/boston-weather
9. https://www.usa-weather.info/usa/massachusetts/weather-boston/10-day-forecast
10. <https://www.usa-weather.info/usa/massachusetts/weather-south-boston/10-day->

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,3,4,4,4,4,2,4,3]

NDCG@10 for Human Judgement: 0.986727020392247

BM25 Rank: [7, 3, 8, 6, 10, 1, 9, 2, 4, 5]

NDCG@10 for BM25: 0.954677843723158

Query Likelihood Jelinek mercer smoothing ranking: [4, 9, 6, 7, 3, 1, 2, 8, 10, 5]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.958679958242155

**Query 16:** Pros and Cons of butterfly keyboard used by Apple

Description: I would like to see the advantages and disadvantages of the butterfly keyboard used by apple. I would also expect why did apple revert back to old keyboard style and few images of butterfly. Way to fix issues of a butterfly keyboard

Links rank wise:

1. https://everymac.com/systems/apple/macbook\_pro/macbook-pro-touch-bar-faq/macbook-pro-touch-bar-pros-and-cons.html
2. https://www.zdnet.com/article/macbooks-still-have-keyboard-problems-i-went-to-two-apple-stores-to-find-out/
3. https://www.imore.com/macbook-pro-butterfly-keyboard-effect
4. https://finance.yahoo.com/video/pros-cons-apple-card-205231873.html
5. https://www.firstpost.com/tech/news-analysis/apples-shiny-new-macbook-here-are-the-pros-and-cons-of-buying-this-1299-laptop-3663833.html
6. https://www.reddit.com/r/apple/comments/bh2f3m/are\_the\_keyboards\_on\_the\_new\_macbook\_pros\_really/
7. https://rapidrepair.in/blog/pros-cons-macbook-air/
8. https://9to5mac.com/2017/02/22/apple-butterfly-keyboard-poll/
9. <https://www.investmentwatchblog.com/pros-and-cons-of-apples-earnings-call/>
10. <https://www.laptopmag.com/articles/macbook-pro-2018-reasons-to-buy-and-skip>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [1,3,2,0,1,2,2,3,2,2]

NDCG@10 for Human Judgement: 0.817490375424837

BM25 Rank: [5, 7, 8, 10, 6, 4, 1, 3, 2, 9]

NDCG@10 for BM25: 0.802959108889554

Query Likelihood Jelinek mercer smoothing ranking: [7, 1, 4, 5, 6, 9, 8, 10, 2, 3]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.896675048724282

**Query 17:** Interview process of Amazon

Description: I want to know about the detailed interview process of Amazon starting from the application part until a person gets an offer. Along with this I would like to know bit about amazon, pros and cons of working at amazon and different interview questions which were asked at Amazon.

Links rank wise:

1. https://www.paysa.com/blog/a-step-by-step-guide-to-the-amazon-interview-process/
2. https://www.amazon.jobs/en/landing\_pages/interviewing-at-amazon
3. https://www.geeksforgeeks.org/amazon-recruitment-process/
4. https://www.indeed.com/cmp/Amazon.com/interviews
5. https://www.snagajob.com/blog/post/amazons-hiring-process
6. https://www.glassdoor.com/Interview/Amazon-Interview-Questions-E6036.htm
7. https://questionsgems.com/amazon-interview-questions/
8. https://blog.aboutamazon.com/working-at-amazon/whats-it-like-to-interview-at-amazon
9. https://interviewpenguin.com/amazon-interview-questions/
10. <https://www.agent.media/grow/hardest-amazon-interview-questions/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,4,3,4,3,3,2,3,1]

NDCG@10 for Human Judgement: 0.996195509852683

BM25 Rank: [3, 9, 6, 4, 8, 1, 7, 10, 2, 5]

NDCG@10 for BM25: 0.916900366753042

Query Likelihood Jelinek mercer smoothing ranking: [7, 9, 10, 5, 8, 1, 4, 6, 2, 3]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.963349147518583

**Query 18:** Independent study at northeastern

Description: I want to know what the procedure is involved in doing the independent study at northeastern. The different schools inside northeastern where a student can do independent study.

Links rank wise:

1. https://web.northeastern.edu/ostadabbas/course/independent-study/
2. https://registrar.northeastern.edu/article/individual-instruction-registration/
3. http://catalog.northeastern.edu/professional-studies/academic-policies-procedures/registration-taking-courses/
4. https://damore-mckim.northeastern.edu/resources/independent-study-honors-thesis-proposal/
5. https://registrar.northeastern.edu/article/independent-majors/
6. http://catalog.northeastern.edu/graduate/professional-studies/academic-policies-procedures/full-time-status/
7. https://web.northeastern.edu/ledlab/directed-study/
8. https://www.weinberg.northwestern.edu/undergraduate/courses-registration-grades/independent-study.html
9. https://www.coursicle.com/neu/courses/BUSN/4993/
10. <https://www.coursicle.com/neu/courses/INFO/7978/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,2,2,4,3,2,0,3,3,3]

NDCG@10 for Human Judgement: 0.935262602299649

BM25 Rank: [10, 4, 3, 5, 8, 2, 9, 6, 1, 7]

NDCG@10 for BM25: 0.880793217193906

Query Likelihood Jelinek mercer smoothing ranking: [10, 6, 5, 7, 1, 8, 4, 2, 3, 9]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.947216336722969

**Query 19:** Price trend of Bitcoin

Description: I want to know what the Bitcoin is. The current price of Bitcoin, how the bitcoin has varied along the years. The highest value of bitcoin and lowest value of bitcoin over the years. Along with all these I would like to know other crypto currency trend compared with bitcoin.

Links rank wise:

1. https://www.coindesk.com/price/bitcoin
2. https://en.m.wikipedia.org/wiki/History\_of\_bitcoin
3. https://coinmarketcap.com/currencies/bitcoin/
4. https://www.bing.com/news/search?q=Price+Trend+Of+Bitcoin&qpvt=Price+trend+of+Bitcoin&FORM=EWRE
5. https://www.coinbase.com/price/bitcoin
6. https://www.tradingview.com/symbols/BTCUSD/
7. https://www.newsbtc.com/2019/11/22/ripple-xrp-price-trend-overwhelmingly-negative-bitcoin-dives-to-7-5k/
8. https://www.statista.com/statistics/326707/bitcoin-price-index/
9. https://www.ccn.com/bitcoin-price/
10. <https://coinmarketcap.com/currencies/bitcoin/historical-data/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,4,4,3,3,3,2,2,4,4]

NDCG@10 for Human Judgement: 0.942361607388353

BM25 Rank: [5, 6, 9, 1, 8, 3, 2, 4, 7, 10]

NDCG@10 for BM25: 0.887613052101235

Query Likelihood Jelinek mercer smoothing ranking: [10, 8, 3, 7, 5, 2, 6, 4, 1, 9]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.921816018599439

**Query 20:** How to tackle imbalanced dataset

Description: I want to know what imbalanced dataset is with few real-life examples. Along with this I want to know various methods of handling imbalanced dataset problems. Best method which would work on most datasets that has been tested by many people and methods I should avoid while I work on imbalanced dataset

Links rank wise:

1. https://www.kdnuggets.com/2017/06/7-techniques-handle-imbalanced-data.html
2. https://towardsdatascience.com/methods-for-dealing-with-imbalanced-data-5b761be45a18
3. https://towardsdatascience.com/handling-imbalanced-datasets-in-machine-learning-7a0e84220f28
4. https://www.analyticsvidhya.com/blog/2017/03/imbalanced-classification-problem/
5. https://machinelearningmastery.com/tactics-to-combat-imbalanced-classes-in-your-machine-learning-dataset/
6. https://www.datacamp.com/community/tutorials/diving-deep-imbalanced-data
7. https://dzone.com/articles/handle-class-imbalance-data-with-r
8. https://towardsdatascience.com/dealing-with-class-imbalanced-datasets-for-classification-2cc6fad99fd9
9. https://www.einfochips.com/blog/addressing-challenges-associated-with-imbalanced-datasets-in-machine-learning/
10. https://www.datasciencecentral.com/profiles/blogs/dealing-with-imbalanced-datasets

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,3,4,3,4,3,3,3,4,4]

NDCG@10 for Human Judgement: 0.933013856439462

BM25 Rank: [8, 2, 3, 5, 6, 1, 7, 10, 4, 9]

NDCG@10 for BM25: 0.929866880348598

Query Likelihood Jelinek mercer smoothing ranking: [4, 7, 2, 8, 6, 1, 3, 5, 9, 10]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.986337349593966

**Query 21:** Which is better Marvel or DC comics

Description: I want to know what marvel and DC comics is, Different characters in both comics, comparison of characters and similar character in both the comics and then tell which universe is better. I would also like to see few images of Marvel and DC comics and ecommerce websites like Amazon and Ebay where I can buy Marvel and DC comics.

Links rank wise:

1. https://www.quora.com/Which-is-better-DC-or-Marvel
2. https://chstalon.com/8810/opinion/personal-perspective-why-dc-is-better-than-marvel/
3. https://www.quora.com/What-is-Marvel-and-DC
4. https://mtulode.com/3276/opinion/debate-which-is-better-marvel-or-dc/
5. https://www.cnet.com/special-reports/marvel-cinematic-universe-dc-extended-universe-showdown/
6. https://www.cbr.com/dc-vs-marvel-why-marvel-wins-dc-is-better-and-both-lose/
7. https://www.cheatsheet.com/entertainment/marvel-vs-dc-what-makes-them-different-and-which-is-better.html/
8. https://www.dailydot.com/parsec/marvel-vs-dc/
9. http://whatculture.com/comics/9-reasons-why-dc-really-is-better-than-marvel
10. <https://www.quora.com/Why-is-DC-Comics-better-than-the-Marvel-universe>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,2,1,3,4,4,3,3,0,1]

NDCG@10 for Human Judgement: 0.877885049955361

BM25 Rank: [3, 5, 2, 4, 10, 8, 7, 6, 9, 1]

NDCG@10 for BM25: 0.754859472999335

Query Likelihood Jelinek mercer smoothing ranking: [6, 8, 1, 5, 4, 10, 9, 3, 2, 7]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.725803788006255

**Query 22:** Different topic modelling techniques and evaluations

Description: I want to know what topic modelling is, different topic modeling algorithms that can be used. Once we implement topic modeling on a text dataset, I would like to know different kinds of evaluation metrics that should be used to know the model performance.

Links rank wise:

1. https://datascienceplus.com/evaluation-of-topic-modeling-topic-coherence/
2. https://datascience.blog.wzb.eu/2017/11/09/topic-modeling-evaluation-in-python-with-tmtoolkit/
3. https://mimno.infosci.cornell.edu/info6150/
4. https://www.directhit.com/slp?&q=modelling+techniques&sid=ae2d70e0-b600-4838-97fd-faae101a1c33-0-dh\_msb&kwid=Different%20topic%20modelling%20techniques%20and%20evaluations&cid=85280990374275
5. https://www.datasciencecentral.com/profiles/blogs/7-important-model-evaluation-error-metrics-everyone-should-know
6. https://www.quora.com/What-are-good-ways-of-evaluating-the-topics-generated-by-running-LDA-on-a-corpus
7. https://www.kdnuggets.com/2016/07/text-mining-101-topic-modeling.html
8. https://tei.cgu.edu/areasofstudy/evaluation-approaches-and-techniques/
9. https://provalisresearch.com/blog/topic-modeling/
10. <https://tei.cgu.edu/areasofstudy/evaluation-approaches-and-techniques/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [2,3,1,1,3,2,2,0,1,2]

NDCG@10 for Human Judgement: 0.896864385144098

BM25 Rank: [3, 5, 6, 7, 10, 4, 1, 8, 2, 9]

NDCG@10 for BM25: 0.850006452223126

Query Likelihood Jelinek mercer smoothing ranking: [7, 10, 4, 6, 3, 9, 2, 5, 8, 1]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.768306304127003

**Query 23:** Cracking the coding interview

Description: I want to know how to crack a coding interview. Different approach that I have to follow to prepare for a coding interview. Few books to crack a coding interview, Ecommerce websites where I can buy the book.

Links rank wise:

1. http://www.crackingthecodinginterview.com
2. https://www.amazon.com/Cracking-Coding-Interview-Programming-Questions/dp/0984782850
3. https://www.amazon.com/Cracking-Coding-Interview-Programming-Questions/dp/098478280X
4. http://www.crackingthecodinginterview.com/contents.html
5. https://www.careercup.com/book
6. https://rover.ebay.com/rover/1/711-34000-13078-0/2?mpre=http%3A%2F%2Fwww.ebay.com%2Fulk%2Fsch%2F%3F\_nkw%3Dcoding%2520interview&keyword=coding%20interview&crlp=\_201803&MT\_ID=&geo\_id=&rlsatarget=kwd-77515626261836:loc-190&adpos=&device=c&poi=&loc=103484&abcId=&treatment\_id=7&cmpgn=301085059&adgroupid=1240249176011134&matchtype=p&msnetwork=o&msclkid=2ecf3cb124191d4e8e476140be33254a
7. http://www.crackingthecodinginterview.com/solutions.html
8. https://www.amazon.com/Coding-Interview-Preparation-Programming-Cracking-ebook/dp/B07F288KPX
9. https://www.goodreads.com/book/show/12544648-cracking-the-coding-interview
10. <https://www.geeksforgeeks.org/practice-for-cracking-any-coding-interview/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [2,2,2,1,0,2,2,0,1,4]

NDCG@10 for Human Judgement: 0.813221000190161

BM25 Rank: [3, 9, 10, 4, 6, 2, 8, 5, 1, 7]

NDCG@10 for BM25: 0.738484790014938

Query Likelihood Jelinek mercer smoothing ranking: [3, 8, 7, 1, 9, 2, 10, 5, 6, 4]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.792149257852893

**Query-24** Why is it important to get a flu shot

Description: I want to know why it is important to get a flu shot. When is the good time to get a flu shot? Different places where flu shot is given. What happens if I don’t get a flu shot. Allergies once I get a flushot and various precautions that has to be taken before getting a flu shot.

Links rank wise:

|  |
| --- |
| 1. https://www.healthline.com/health/cold-flu/flu-shot |
| 1. https://www.cdc.gov/flu/prevent/vaccine-benefits.htm |
| 1. https://www.cdc.gov/flu/prevent/keyfacts.htm |
| 1. https://www.healthline.com/health/flu/importance-of-flu-shot |
| 1. https://www.chla.org/blog/rn-remedies/getting-the-flu-influenza-vaccine-why-it-s-important |
| 1. https://www.mayoclinic.org/diseases-conditions/flu/in-depth/flu-shots/art-20048000 |
| 1. https://www.piedmont.org/living-better/10-reasons-to-get-a-flu-shot |
| 1. https://brighamhealthhub.org/prevention/five-reasons-to-get-your-flu-shot |
| 1. https://health.clevelandclinic.org/why-its-important-to-get-vaccinated-before-flu-season-hits/ |
| 1. <https://kidshealth.org/en/kids/flu-shot.html> |

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,2,4,4,2,4,3,4,3]

NDCG@10 for Human Judgement: 0.952299907970858

BM25 Rank: [1, 10, 6, 7, 2, 5, 3, 9, 4, 8]

NDCG@10 for BM25: 0.937085865291772

Query Likelihood Jelinek mercer smoothing ranking: [10, 9, 8, 3, 7, 5, 1, 2, 4, 6]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.986756732279887

**Query-25** You will never walk alone

Description: I want a link of Liverpool website and links where ‘you will never walk alone’ lyrics is present. Ecommerce websites such as Amazon and Ebay where I can buy t shits, mugs with you will never walk alone slogan

Links rank wise:

1. https://www.smoothradio.com/features/the-story-of/youll-never-walk-alone-liverpool-fans-why/
2. https://www.fourfourtwo.com/features/why-liverpool-fans-sing-youll-never-walk-alone
3. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=34&cad=rja&uact=8&ved=2ahUKEwiW0LuV4a7mAhXmYN8KHa35BIQQFjAhegQIAhAB&url=https%3A%2F%2Fwww.amazon.com%2FLiverpool-Youll-Never-Alone-Official%2Fdp%2FB00MI4DOP4&usg=AOvVaw39Z60Dn5aVUg9oRgq\_zlYk
4. https://en.wikipedia.org/wiki/You%27ll\_Never\_Walk\_Alone
5. https://www.classicfm.com/discover-music/youll-never-walk-alone-liverpool-fc/
6. https://www.goal.com/en-us/news/ynwa-how-youll-never-walk-alone-became-a-liverpool-fc-anthem/selbcrlre9lz1n9dat1b1e60q
7. https://www.wrti.org/post/youll-never-walk-alone-story-behind-rodgers-and-hammersteins-beloved-song-hope
8. https://www.francemusique.com/songs/history-football-anthem-you-ll-never-walk-alone-15602
9. https://www.amazon.com/s?k=you+never+walk+alone&hvadid=78134053443124&hvbmt=be&hvdev=c&hvqmt=e&tag=mh0b-20&ref=pd\_sl\_6khatzksfc\_e
10. <https://www.walmart.com/ip/Never-Walk-Alone/574798741?adid=22222222264426801693&wmlspartner=wmtlabs&wl0=b&wl1=o&wl2=c&wl3=74904330799817&wl4=dat-2326704043380979:loc-190&wl5=103484&wl6=&wl7=&wl14=You%20will%20never%20walk%20alone&veh=sem&msclkid=4ed508724e0418d0f2fd55831ea2478e>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,3,2,3,4,3,0,4,2,0]

NDCG@10 for Human Judgement: 0.908292655868841

BM25 Rank: [7, 8, 9, 3, 6, 2, 5, 4, 10, 1]

NDCG@10 for BM25: 0.752726465136869

Query Likelihood Jelinek mercer smoothing ranking:[ 9, 2, 7, 6, 8, 10, 5, 3, 4, 1]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.747887244645117

**Query 26** - Which is a better IDE for Python

Description: I would like to get links of different IDE where Python can be used and among them the faster IDE’s, better user interface. Which IDE is better to work on machine learning problems. IDE’s that are suitable for Natural Language processing work.

Links rank wise:

1. https://www.softwaretestinghelp.com/python-ide-code-editors/
2. https://realpython.com/python-ides-code-editors-guide/
3. https://codegeekz.com/best-python-ide-for-developers/
4. https://www.techradar.com/best/best-ide-for-python
5. https://www.datacamp.com/community/tutorials/top-python-ides-for-2019
6. https://www.guru99.com/python-ide-code-editor.html
7. https://djangostars.com/blog/python-ide/
8. https://www.programiz.com/python-programming/ide
9. https://hackr.io/blog/best-python-ide
10. https://www.quora.com/What-is-the-best-IDE-for-Python

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [2,2,3,4,3,2,4,2,3,2]

NDCG@10 for Human Judgement: 0.863645757329858

BM25 Rank: [5, 1, 10, 7, 3, 9, 4, 6, 8, 2]

NDCG@10 for BM25: 0.857546679017545

Query Likelihood Jelinek mercer smoothing ranking: [5, 2, 1, 6, 3, 9, 7, 8, 10, 4]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.860155320415265

**Query 27-** Skiing in and around Boston

Description: I want to different locations where they teach us how to ski, also best places around Boston where skiing is famous. Cost of skiing, different gears that should be bought before going to ski.

Links rank wise:

1. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwiy0KjRt67mAhUjzlkKHa4UA1cQFjABegQIAhAB&url=https%3A%2F%2Fwww.snowpak.com%2Fmassachusetts%2Fclosest-ski-resorts-near-boston&usg=AOvVaw3SNhtCzM6prqcsxJ-sQ08B
2. https://www.tripsavvy.com/where-to-go-skiing-near-boston-4154875
3. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwiy0KjRt67mAhUjzlkKHa4UA1cQFjACegQIBBAB&url=https%3A%2F%2Fwww.boston.com%2Fculture%2Fnew-england-travel%2F2014%2F11%2F07%2Fski-minus-2-hours-slopes-within-120-minutes-of-boston&usg=AOvVaw0Ylt1GVsksHlWWGGXZwu75
4. https://fitt.co/boston/articles/7-best-ski-and-snowboard-spots-near-boston
5. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=2ahUKEwiy0KjRt67mAhUjzlkKHa4UA1cQFjADegQIAxAB&url=https%3A%2F%2Fwww.tripsavvy.com%2Fwhere-to-go-skiing-near-boston-4154875&usg=AOvVaw123iNQFnaXW3pBuYrZ3oLS
6. https://newengland.com/today/travel/massachusetts/boston/skiing-near-boston/
7. https://www.timeout.com/boston/things-to-do/best-skiing-near-boston
8. https://www.tripsavvy.com/where-to-go-skiing-near-boston-4154875
9. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=2ahUKEwiy0KjRt67mAhUjzlkKHa4UA1cQFjAEegQICBAB&url=https%3A%2F%2Ffitt.co%2Fboston%2Farticles%2F7-best-ski-and-snowboard-spots-near-boston&usg=AOvVaw0At7LHvNhBlhkvdZKf7B5B
10. <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=2ahUKEwiy0KjRt67mAhUjzlkKHa4UA1cQFjAFegQIBxAB&url=https%3A%2F%2Fwww.boston-discovery-guide.com%2Fmassachusetts-ski-areas.html&usg=AOvVaw0cZwhHfAqjxJe82PBo4AhY>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,2,3,3,4,2,3,3,3,3]

NDCG@10 for Human Judgement: 0.928052182902325

BM25 Rank: [5, 2, 6, 7, 8, 1, 4, 3, 9, 10]

NDCG@10 for BM25: 0.877115499322554

Query Likelihood Jelinek mercer smoothing ranking: [10, 5, 6, 4, 8, 2, 1, 7, 3, 9]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.930110231531816

**Query 28** - Top 10 colleges in United States for Data Science

Description: I am expecting a document which tells me the top 10 colleges in US specifically for Data Science based on their previous year rankings. I also want to see the city and State the college is located in. When the college takes in applications and pre-conditions for admission(if any)

Links Rank wise:

1. <https://www.techrepublic.com/article/the-top-10-schools-to-study-data-science/>
2. <https://www.stoodnt.com/blog/top-universities-for-ms-in-data-science-in-usa/>
3. <https://www.mbacrystalball.com/masters-degree/data-science-analytics>
4. <https://towardsdatascience.com/20-universities-for-pursuing-master-of-science-in-data-science-on-campus-in-the-usa-2018-9970d5d25bd5>
5. <https://mastersindatascience.com/top-masters-in-data-science/>
6. <https://www.bachelorsportal.com/study-options/269779226/data-science-big-data-united-states.html>
7. <https://www.datasciencedegreeprograms.net/rankings/masters-data-science/>
8. <https://www.quora.com/Which-is-the-best-university-in-the-world-for-a-masters-in-data-science>
9. <https://www.topuniversities.com/university-rankings/business-masters-rankings/business-analytics/2018>
10. <https://www.quora.com/What-are-the-best-MS-in-Data-Science-Analytics-Programs-in-the-US>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,2,4,2,2,2,2,1,1,1]

NDCG@10 for Human Judgement: 0.941648054460978

BM25 Rank: [3, 4, 8, 6, 2, 1, 9, 10, 7, 5]

NDCG@10 for BM25: 0.851681577847736

Query Likelihood Jelinek mercer smoothing ranking: [3, 1, 5, 2, 8, 9, 6, 7, 4, 10]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.822898259328723

**Query 29** - Benefits of drinking water

Description: I want to see all the benefits of drinking water w.r.t helping fight diseases, etc. Also what other extra effects if has. One of which I know is glowing skin. I want to know many more benefits so that I can be motivated to drink more water. I would also want to see any strategies people follow to help them drink more water.

Links Rank wise:

1. <https://www.medicalnewstoday.com/articles/290814.php>
2. <https://www.webmd.com/diet/features/6-reasons-to-drink-water>

<https://www.cdc.gov/healthywater/drinking/nutrition/index.html>

1. <https://www.elementalbottles.com/blogs/news/14-overlooked-benefits-of-drinking-water>
2. <https://www.organicfacts.net/health-benefits/other/health-benefits-of-drinking-water.html>
3. <https://greatist.com/health/reasons-to-drink-water>
4. <https://www.mindbodygreen.com/0-4287/10-Reasons-Why-You-Should-Drink-More-Water.html>
5. <https://www.branfordhall.edu/the-benefits-of-drinking-more-water/>
6. <https://theberkey.com/blogs/water-filter/drink-water-first-thing-in-the-morning-here-s-10-amazing-benefits-you-get-on-an-empty-stomach>
7. <https://pmaonline.com/posts/adult-primary-care/fifteen-benefits-of-drinking-water/>
8. <https://www.tasteofhome.com/collection/benefits-of-drinking-water/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,2,4,1,3,2,0,2,0]

NDCG@10 for Human Judgement: 0.962296020641275

BM25 Rank: [6, 10, 4, 1, 9, 8, 2, 3, 7, 5]

NDCG@10 for BM25: 0.876555240152498

Query Likelihood Jelinek mercer smoothing ranking: [5, 8, 10, 9, 1, 4, 6, 7, 2, 3]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.784951940917177

**Query 30** - Benefits of meditation

Description: Since this term meditation is in great talks now-a-days and people(especially business leaders and people on top of their charts) are talking about it so much I want to learn what are its benefits. I also want to know what benefits are seen by other people by doing it and how it is done. I also want to know the different types of meditation.

Links Rank Wise:

1. <https://www.healthline.com/nutrition/12-benefits-of-meditation>
2. <https://www.healthline.com/nutrition/12-benefits-of-meditation>
3. <https://liveanddare.com/benefits-of-meditation/>
4. <https://www.forbes.com/sites/alicegwalton/2015/02/09/7-ways-meditation-can-actually-change-the-brain/>
5. <https://www.scienceofpeople.com/meditation-benefits/>
6. <https://www.psychologytoday.com/us/blog/feeling-it/201309/20-scientific-reasons-start-meditating-today>
7. <https://liveanddare.com/benefits-of-meditation/>
8. <https://www.organicfacts.net/health-benefits/other/meditation.html>
9. <https://mindworks.org/blog/health-benefits-of-meditation/>
10. <https://eocinstitute.org/meditation/141-benefits-of-meditation/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,3,3,3,3,2,2,2,2]

NDCG@10 for Human Judgement: 1.000000000000000

BM25 Rank: [7, 8, 2, 10, 5, 9, 3, 4, 1, 6]

NDCG@10 for BM25: 0.855226160212808

Query Likelihood Jelinek mercer smoothing ranking: [3, 8, 6, 1, 7, 2, 5, 4, 10, 9]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.838760103534341

**Query 31 -** What is spirituality?

Description: Since this term spirituality is a buzz word these days I want to know what it actually means. How are people incorporating it in their loves and what benefits do they see from it. I want to know people’s experiences about it. If anyone has benefitted from it and if yes then how?

Links Rank wise:

1. <https://en.wikipedia.org/wiki/Spirituality>
2. <https://www.takingcharge.csh.umn.edu/what-spirituality>
3. <https://www.psychologytoday.com/us/blog/spiritual-wisdom-secular-times/201103/what-is-spirituality>
4. <https://lonerwolf.com/what-is-spirituality/>
5. <https://liveanddare.com/what-is-spirituality>
6. <https://www.mindcontroversy.com/types-of-spirituality/>
7. <http://keirseymagazine.com/different-kinds-of-spirituality.html>
8. <https://www.dummies.com/religion/spirituality/exploring-the-meaning-of-spirituality/>
9. <https://www.gotquestions.org/religion-spirituality.html>
10. <https://www.essentiallifeskills.net/what-is-spirituality.html>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,3,4,3,2,3,2,2,1,1]

NDCG@10 for Human Judgement: 0.957362392341496

BM25 Rank: [10, 1, 6, 5, 3, 7, 4, 9, 2, 8]

NDCG@10 for BM25: 0.872797737976266

Query Likelihood Jelinek mercer smoothing ranking: [10, 8, 7, 3, 4, 5, 2, 1, 6, 9]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.804592509421380

**Query 32-** Best Drug store makeup brands in us

Description: I want to know the makeup brands in US that are not very costly. I want to see how the prices of certain products differ when bought in different brands. Which one uses organic, paraben free, cruelty free ingredients and still is on the inexpensive side.

Links rank wise:

1. <https://www.cosmopolitan.com/style-beauty/beauty/g15773998/best-drugstore-makeup-brands-products/>
2. <https://www.glamour.com/gallery/beauty-awards-drugstore-makeup-product-winners>
3. <https://www.goodhousekeeping.com/beauty/makeup/tips/g2329/best-drugstore-cosmetics/>
4. <https://www.allure.com/gallery/best-new-drugstore-beauty-launches>
5. <https://www.allure.com/gallery/best-cheap-makeup-brands>
6. <https://www.whowhatwear.com/best-drugstore-foundations>
7. <https://www.byrdie.com/best-drugstore-foundations-4159370>
8. <https://www.harpersbazaar.com/beauty/skin-care/g5660/best-drugstore-products/>
9. <https://www.self.com/gallery/ultimate-guide-to-the-best-drugstore-makeup>
10. <https://www.makeup.com/best-drugstore-makeup-under-15>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,3,3,3,3,2,2,2,2]

NDCG@10 for Human Judgement: 1.000000000000000

BM25 Rank: [3, 4, 2, 5, 1, 8, 7, 9, 6, 10]

NDCG@10 for BM25: 0.947157485566471

Query Likelihood Jelinek mercer smoothing ranking: [1, 4, 3, 2, 5, 6, 7, 8, 9, 10]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.959555451888012

**Query 33 -** Effects of fast food on human body

Description: Since we are what we eat I want to know the effects of fast food on the body. I generally eat fast food when I am in a rush and want to motivate myself from stopping to do so by knowing about the ill effects of fast food. Also, I want to know if there is any good effect of fast food on human body.

Links Rank wise:

1. <https://youngwomenshealth.org/2013/12/05/fast-food/>
2. <https://www.healthline.com/health/fast-food-effects-on-body>
3. <https://www.eatthis.com/what-happens-to-your-body-when-you-eat-fast-food/>
4. <https://www.medicalnewstoday.com/articles/324847.php>
5. <https://www.alldaygeneric.blog/the-effects-of-fast-food-on-the-body-alldaygeneric/>
6. <https://www.washingtonpost.com/lifestyle/wellness/sneaking-a-little-junk-food-doesnt-mean-all-is-lost/2018/02/26/828b75fa-1b36-11e8-9de1-147dd2df3829_story.html>
7. <https://www.news-medical.net/health/How-Fast-Food-Affects-Childrens-Health.aspx>
8. <https://www.sciencealert.com/quick-eating-bad-for-waistline-heart-health>
9. <https://food.ndtv.com/lists/the-bad-the-worse-5-ways-junk-food-can-mess-with-your-brain-764392>
10. <https://salud-america.org/13-effects-of-fast-food/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,4,3,2,4,3,2,3,1,2]

NDCG@10 for Human Judgement: 0.946094152080318

BM25 Rank: [7, 3, 9, 6, 2, 5, 8, 10, 4, 1]

NDCG@10 for BM25: 0.890410245524779

Query Likelihood Jelinek mercer smoothing ranking: [3, 9, 2, 8, 5, 4, 6, 10, 7, 1]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.895140326754614

**Query 34 -** How to evaluate a search engine?

Description: With this query I want to know what methods are used to evaluate a search engine. I am expecting to see various different methods based on Ranking, processing time, latency, etc. I also want to see some code implementations that people in the past might have already done for this specific task.

Links Rank wise:

1. <https://www.searchtechnologies.com/blog/how-to-evaluate-a-search-engine>
2. <https://medium.com/@dtunkelang/evaluating-good-search-part-i-measure-it-5507b2dbf4f6>
3. <https://www.emerald.com/insight/content/doi/10.1108/S1876-0562(2012)002012a012/full/html>
4. <https://academy.luminis.eu/wp-content/uploads/2015/08/Evaluating-Search-Engines-by-Richard-Berendsen1.pdf>
5. <https://www.slideshare.net/Philbradley/evaluating-search-engines-80980536>
6. <https://pdfs.semanticscholar.org/214c/0767d4fa9d8b91dc27f117ab69cbd0107226.pdf>
7. <http://www.toontricks.com/2018/11/tutorial-how-to-evaluate-search-engine.html>
8. <https://www.searchtechnologies.com/search-engine-white-papers/search-engine-evaluation-criteria>
9. <https://websitebuilders.com/how-to/learn-to-search/advanced-web-search/>
10. <https://moz.com/beginners-guide-to-seo/how-search-engines-operate>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,4,2,4,3,2,4,2,2]

NDCG@10 for Human Judgement: 0.968268047054403

BM25 Rank:[ 1, 9, 8, 5, 6, 7, 2, 10, 3, 4]

NDCG@10 for BM25: 0.912365330214142

Query Likelihood Jelinek mercer smoothing ranking: [8, 9, 4, 1, 3, 6, 5, 2, 10, 7],

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.995539633565186

**Query 35 -** How to cook Matar Paneer?

Description: I am expecting a full detailed recipe as the result of this query. I am expecting to know all minute details as well such as ingredients quantity, how much time will be taken to cook and at what temperature to cook.

Links Rank wise:

1. <https://www.indianhealthyrecipes.com/matar-paneer-mutter-masala/>
2. <https://www.vegrecipesofindia.com/matar-paneer/>
3. <https://myfoodstory.com/creamy-matar-paneer-curry-recipe/>
4. <https://www.cookwithmanali.com/matar-paneer/>
5. <https://food.ndtv.com/recipe-matar-paneer-100464>
6. <http://maunikagowardhan.co.uk/cook-in-a-curry/matar-paneer/>
7. <https://www.bbcgoodfood.com/recipes/matar-paneer>
8. <https://www.whiskaffair.com/matar-paneer-recipe/>
9. <https://foodviva.com/punjabi-recipes/matar-paneer-recipe/>
10. <https://thetastesofindia.com/matar-paneer-recipe/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,3,4,2,4,3,2,4,2]

NDCG@10 for Human Judgement: 0.979874509354753

BM25 Rank: [3, 7, 10, 4, 2, 9, 6, 1, 5, 8]

NDCG@10 for BM25: 0.870010444986535

Query Likelihood Jelinek mercer smoothing ranking: [1, 3, 10, 8, 2, 4, 9, 7, 6, 5],

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.849062583052594

**Query 36 -** Headphones vs Earphones

Description: Since I want to buy one I am confused between the two. I want to hear people’s opinions on the same. Which one do people generally prefer? And if this choice is affected by any other external factor such as usage in gym, while walking, talking on phone, watching videos, etc.

Link Rank wise:

1. <https://www.quora.com/Which-are-better-headphones-or-earphones>
2. <https://makingnoiseandhearingthings.com/2014/03/28/which-are-better-earphones-or-headphones/>
3. <https://www.lifewire.com/earphones-vs-earbuds-2640208>
4. <https://www.healthyhearing.com/report/52503-Headphones-when-hearing-danger-is-closer-than-you-think>
5. <https://www.techradar.com/in/news/the-best-earbuds-in-ear-headphones-available-today>
6. <https://electronics.howstuffworks.com/gadgets/audio-music/earbuds-vs-headphones.htm>
7. <https://phiaton.com/blogs/audio/earphones-vs-headphones-a-sound-debate>
8. <https://www.lifewire.com/earphones-vs-earbuds-2640208>
9. <https://www.techradar.com/news/wireless-headphones-vs-true-wireless-earbuds-which-design-is-best-for-you>
10. <https://www.healthyhearing.com/report/52503-Headphones-when-hearing-danger-is-closer-than-you-think>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [3,4,4,3,4,3,2,1,0,2]

NDCG@10 for Human Judgement: 0.952247606404333

BM25 Rank: [6, 4, 2, 8, 7, 1, 5, 3, 10, 9]

NDCG@10 for BM25: 0.914024262552728

Query Likelihood Jelinek mercer smoothing ranking: [6, 5, 9, 8, 2, 10, 4, 7, 3, 1],

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.916424030656454

**Query 37 -** good Indian restaurants near me

Description: I am looking for a list of good Indian restaurants near me. I am expecting to see their name, their location, distance from my location, their star rating, cuisine and the budget friendliness. I also want to see their timings.

Link rank wise:

1. <https://www.google.com/aclk?sa=l&ai=DChcSEwjH8oPks67mAhUYlLMKHWB7CosYABAAGgJxbg&sig=AOD64_1ucoTr1VQW3TxhPtrhM88Nc6Uqzw&q=&ved=2ahUKEwi5yPfjs67mAhVPJt8KHZrmCQsQ0Qx6BAgPEAE&adurl=>
2. <https://www.bostonmagazine.com/restaurants/the-best-indian-restaurants-in-boston/>
3. <https://www.tripadvisor.com/Restaurants-g60745-c24-Boston_Massachusetts.html>
4. <https://www.yelp.com/search?find_desc=indian+food&find_loc=Boston%2C+MA>
5. <https://www.timeout.com/boston/restaurants/best-indian-restaurants-in-boston>
6. <https://www.zagat.com/l/best-indian-restaurants-in-boston>
7. <https://threebestrated.com/indian-restaurants-in-boston-ma>
8. <http://www.punjabpalace.com/>
9. <https://www.yelp.com/nearme/indian-restaurants>
10. <https://places-to-eat-near-me.com/cuisine-food/indian-restaurants/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,4,2,3,4,3,2,1,0,2]

NDCG@10 for Human Judgement: 0.977775457699569

BM25 Rank: [8, 5, 1, 3, 4, 9, 7, 6, 10, 2]

NDCG@10 for BM25: 0.844397271784192

Query Likelihood Jelinek mercer smoothing ranking: [4, 10, 2, 7, 3, 5, 1, 8, 9, 6],

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.795941593962573

**Query 38 -** Latest Hollywood songs

Description: I am looking to find all the latest releases in the past couple of months as part of the output of this query with a link to be able to listen to the songs, see the song writer as well as the singer.

Link rank wise:

1. <https://open.spotify.com/playlist/3Zu0J0JzSRzAT32LgFyg7i>
2. <https://www.elle.com/culture/music/g25939887/best-songs-2019/>
3. <https://gaana.com/newrelease/english>
4. <https://www.amoyshare.com/free-mp3-finder/best-hollywood-songs.html>
5. <https://www.billboard.com/articles/news/list/8514325/best-songs-of-2019-so-far-staff-picks>
6. <https://www.esquire.com/entertainment/music/g15948963/best-songs-2018/>
7. <https://www.seventeen.com/celebrity/music/g25563484/best-popular-songs-2019/>
8. <https://www.quora.com/Which-are-the-latest-trending-English-songs>
9. <https://www.billboard.com/articles/news/list/8459289/best-songs-of-2018-top-50>
10. <https://time.com/5588206/songs-of-the-half-year-2019/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,2,3,4,3,2,2,1,2]

NDCG@10 for Human Judgement: 0.970111258416514

BM25 Rank: [1, 4, 3, 2, 5, 6, 7, 8, 9, 10]

NDCG@10 for BM25: 0.970111258416514

Query Likelihood Jelinek mercer smoothing ranking: [10, 3, 1, 8, 6, 2, 9, 5, 7, 4],

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.970111258416514

**Query 39 -** ResNet vs DenseNet

Description: I am expecting to see the differences between these 2 machine learning algorithms. I am looking for the architecture of both and how are they different. Which packages are pre-built to be able to use them directly and what are the parameters that these algorithms would require.

Link Rank wise:

1. <https://medium.com/@smallfishbigsea/densenet-2b0889854a92>
2. <https://towardsdatascience.com/an-overview-of-resnet-and-its-variants-5281e2f56035>
3. <https://swethatanamala.github.io/2018/09/08/summary-of-densenet-paper/>
4. <https://arxiv.org/pdf/1810.00736>
5. <https://chatbotslife.com/resnets-highwaynets-and-densenets-oh-my-9bb15918ee32>
6. <https://cv-tricks.com/cnn/understand-resnet-alexnet-vgg-inception/>
7. <https://www.pyimagesearch.com/2017/03/20/imagenet-vggnet-resnet-inception-xception-keras/>
8. <http://openaccess.thecvf.com/content_CVPRW_2019/papers/NTIRE/Jang_DenseNet_With_Deep_Residual_Channel-Attention_Blocks_for_Single_Image_Super_CVPRW_2019_paper.pdf>
9. <https://www.reddit.com/r/MachineLearning/comments/67fds7/d_how_does_densenet_compare_to_resnet_and/>
10. <http://slazebni.cs.illinois.edu/spring17/lec04_advanced_cnn.pdf>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,3,3,3,4,3,2,2,1,2]

NDCG@10 for Human Judgement: 0.981356586386592

BM25 Rank: [10, 2, 1, 6, 5, 8, 7, 4, 3, 9]

NDCG@10 for BM25: 0.891354872265403

Query Likelihood Jelinek mercer smoothing ranking: [9, 5, 4, 8, 10, 2, 1, 6, 3, 7],

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.873588943163919

**Query 40 -** MacBook Pro latest

Description: I am expecting to see about the latest MacBook Pro in the market. I want to see all the specifications about the model, model name, it’s price and it’s comparison with the previous models of MacBook pro .

Link Rank wise:

1. <https://www.google.com/aclk?sa=l&ai=DChcSEwinxZ77tq7mAhWLk7MKHecbAYUYABAEGgJxbg&sig=AOD64_1OyQWBmsh5kRO0r0kTXqtQJvDdlg&q=&ved=2ahUKEwjMy5P7tq7mAhXnp1kKHa2VCtoQ0Qx6BAgREAE&adurl=>
2. <https://www.apple.com/newsroom/2019/11/apple-introduces-16-inch-macbook-pro-the-worlds-best-pro-notebook/>
3. <https://www.apple.com/macbook-pro/>
4. <https://www.macrumors.com/roundup/macbook-pro/>
5. <https://www.wired.com/review/apple-macbook-pro-16-inch-2019/>
6. <https://www.bestbuy.com/site/macbooks/macbook-pro/pcmcat378600050009.c?id=pcmcat378600050009>
7. <https://www.techradar.com/news/computing/apple/mac-buyer-s-guide-2015-1295725>
8. <https://www.digitaltrends.com/computing/macbook-pro-2019/>
9. <https://www.laptopmag.com/reviews/16-inch-macbook-pro>
10. <https://9to5mac.com/2019/07/10/2019-macbook-air-macbook-pro-comparison/>

Ranking as per human judgement: [1,2,3,4,5,6,7,8,9,10]

Graded Relevance: [4,2,3,2,4,3,2,3,1,2]

NDCG@10 for Human Judgement: 0.951711520890550

BM25 Rank: [9, 4, 10, 1, 7, 8, 5, 3, 2, 6]

NDCG@10 for BM25: 0.809530304745251

Query Likelihood Jelinek mercer smoothing ranking: [10, 5, 6, 4, 1, 2, 3, 7, 8, 9]

NDCG@10 for Query Likelihood Jelinek mercer smoothing ranking: 0.948952020674113