Misr International University

جامعة مصر الدولية

NEWS AGGREGATOR

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SUPERVISED BY:

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Introduction 1/2

- In the last few years, The world had an incredible and huge growth of the rate of news.
- 44 percent of U.S. consumers cited some sort of online publication as their main source of news in 2017[1].
- At February 2020, Yahoo News had 175 million unique monthly visitors and CNN 95 million unique visitors per month[2].

[1]https://www.statista.com/topics/1640/news/
[2]https:/www.statista.com/statistics/381569/leading-news-and-media-sites-usa-by-share-of-visits/

Introduction 2/2

- Our project aims to aggregate news from as much trusted sources as possible in one place.

- Main tasks for our project is Summarizing those aggregated articles and to Recommend articles according to user's keyword or key phrase.

Related Work

Paper Name	NewsOne- An Aggregation System For News Using Web Scrapping Method[3]	An Analysis of Recommender Algorithms for Online News[4]	A news-topic recommender system[5]
Year	• 2017	• 2014	• 2018
Aim	• Collect the news from multiple sites and merge them all in a summarized website. • Deals with the news URL and save them in the database.	• Implement a recommender system for online news articles.	• Make a news-topic recommender system based on keywords extraction.
Tools	• Web scraping (To get more accurate results). • RSS fetcher (Summary reports from specific websites).	• Content-based filter. • Elastic Search. (To get data that is similar to the articles and events that the user likes or searches).	• Use RAKE(Rapid automatic keyword extraction) operates on individual documents to extract keywords. • Use Keyword scoring to extract topic keywords for a specific time.
Disadvantage	• Provides only the source URL of the news. • Provides only the title of the news.	• Use a static dataset from 25/5/2014 to 30/6/2014.	• Get news from specific(static) Sources as CNN ,Fox news and The New York Times.

[3]K. Sundaramoorthy, R. Durga, and S. Nagadarshini, "Newsone—an aggregation systemfor news using web scraping method," in2017 International Conference on TechnicalAdvancements in Computers and Communications (ICTACC). IEEE, 2017, pp. 136–140.

[4]D. Doychev, A. Lawlor, R. Rafter, and B. Smyth, "An analysis of recommender algo-rithms for online news," inCLEF 2014 Conference and Labs of the Evaluation Forum:Information Access Evaluation Meets Multilinguality, Multimodality and Interaction,15-18 September 2014, Sheffield, United Kingdom, 2014, pp. 177–184.

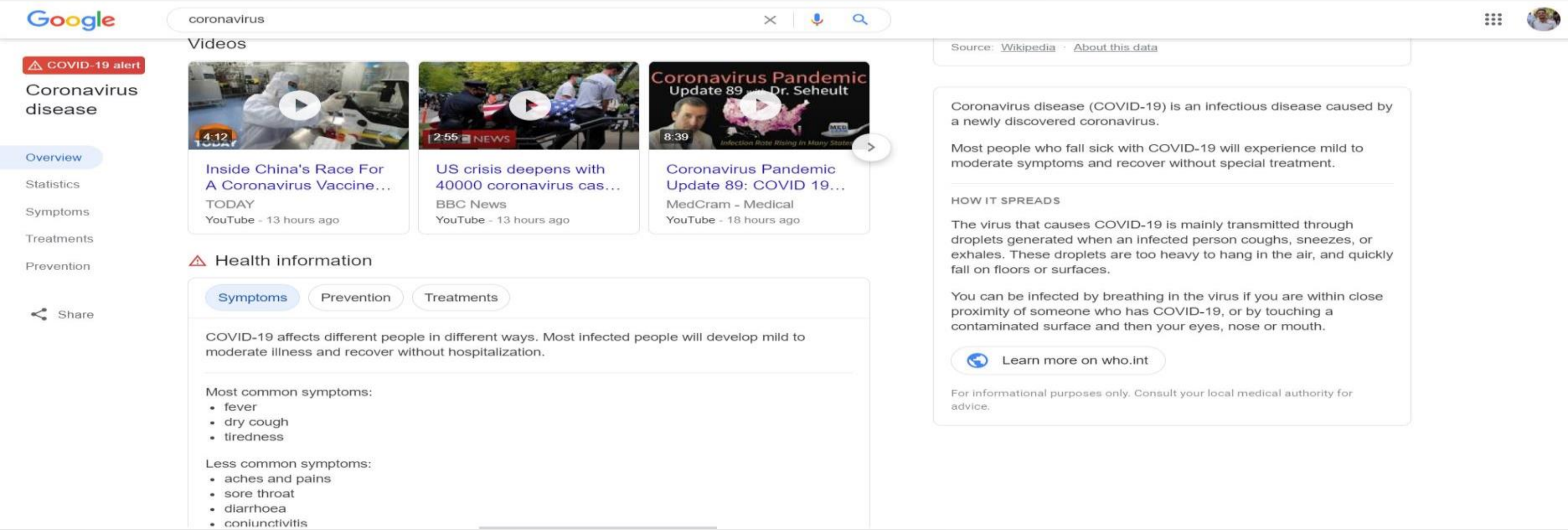
[5]Z. Wang, K. Hahn, Y. Kim, S. Song, and J.-M. Seo, "A news-topic recommender systembased on keywords extraction,"Multimedia Tools and Applications, vol. 77, no. 4, pp.4339–4353, 2018.

Problem Statement

- Aggregate/Recommend highly relevant news to a certain input keyword or key phrases from heterogeneous sources and Summarize them to reduce user’s read time.

Market Need 1/2

- Especially this year, news rate are higher than expected.
- Coronavirus is live example and a main reason for this growth.
- People need to be kept updated with all of the news around the world.



Inside China's Race For A Coronavirus Vaccine...
TODAY
YouTube - 13 hours ago

US crisis deepens with 40000 coronavirus cas...
BBC News
YouTube - 13 hours ago

Coronavirus Pandemic Update 89: COVID 19...
MedCram - Medical
YouTube - 18 hours ago

Health information

Symptoms | Prevention | Treatments

COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization.

Most common symptoms:
- fever
- dry cough
- tiredness

Less common symptoms:
- aches and pains
- sore throat
- diarrhoea
- conjunctivitis

Source: Wikipedia · About this data

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.

Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment.

HOW IT SPREADS

The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces.

You can be infected by breathing in the virus if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth.

Learn more on who.int

For informational purposes only. Consult your local medical authority for advice.

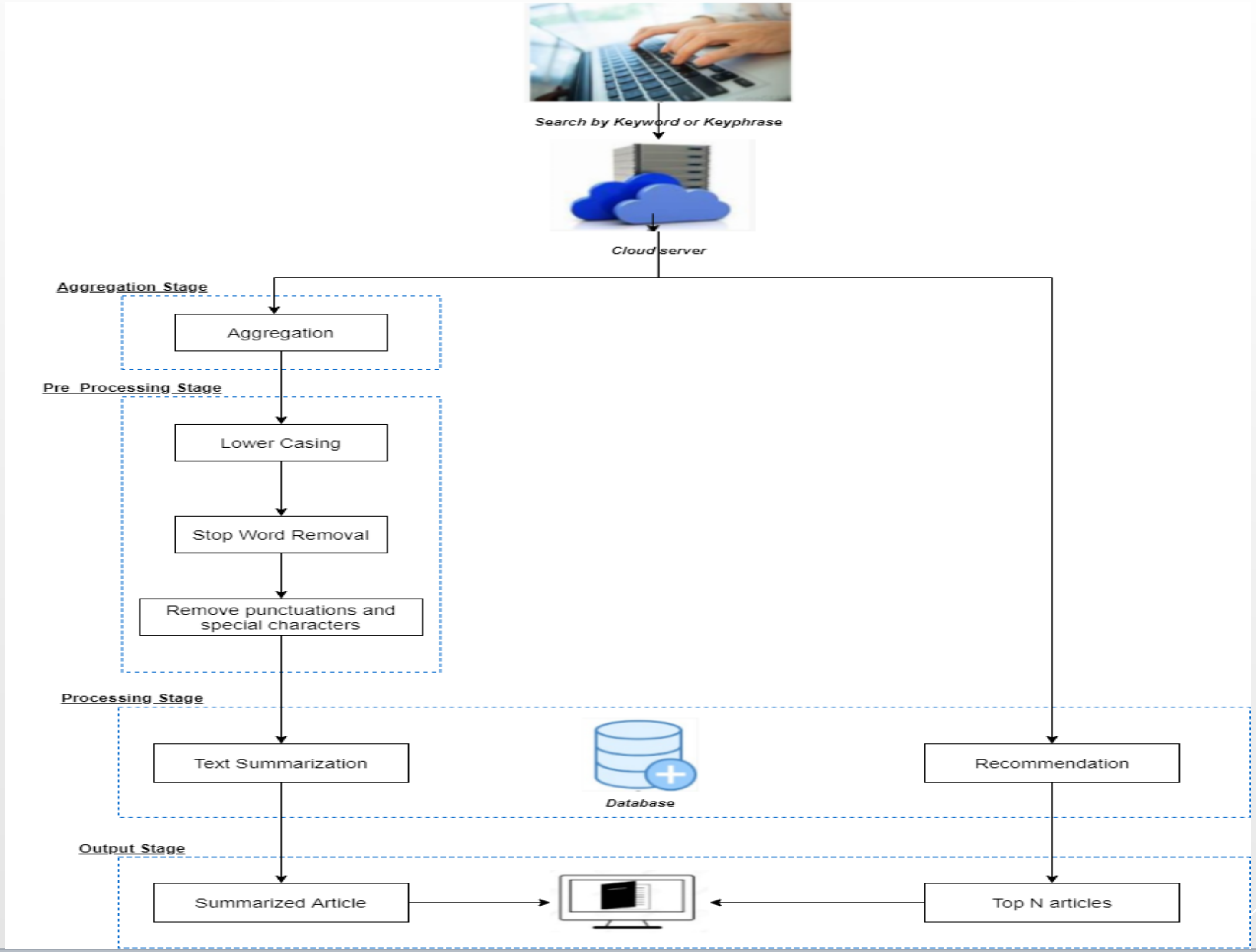
So , what will the system provide as a solution ?

Market Need 2/2

Understandable summary.

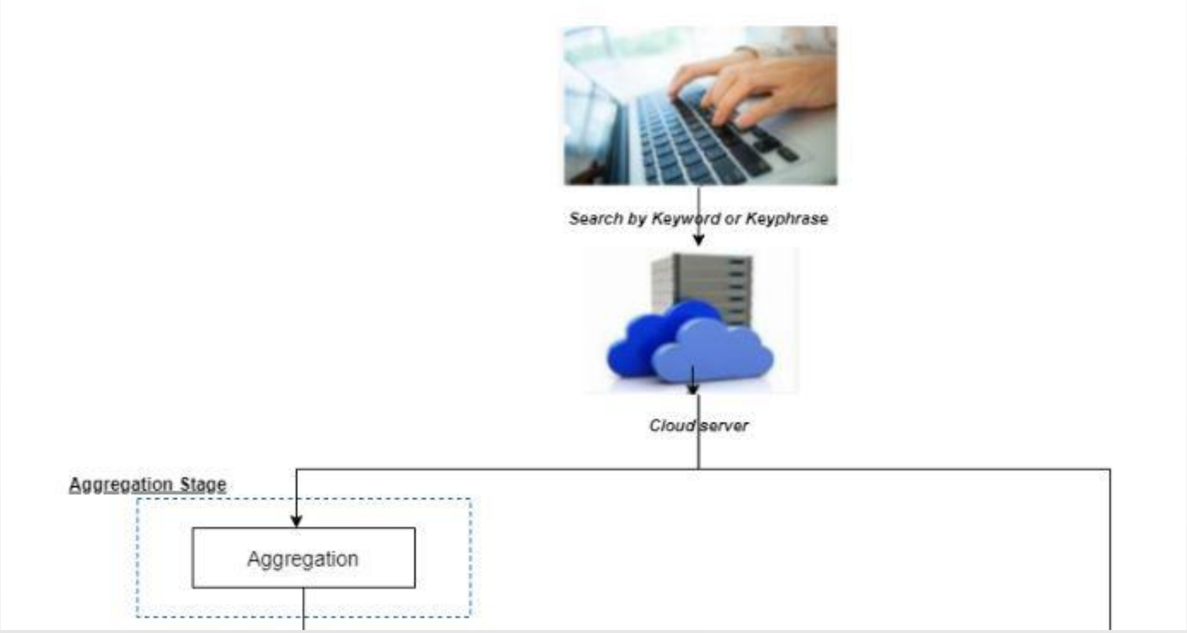
Recommended articles from trusted sources.

System Overview



Aggregation Stage

- Rich Site Summary (RSS) Feeds.
- Web Scraping with Beautiful Soup library.

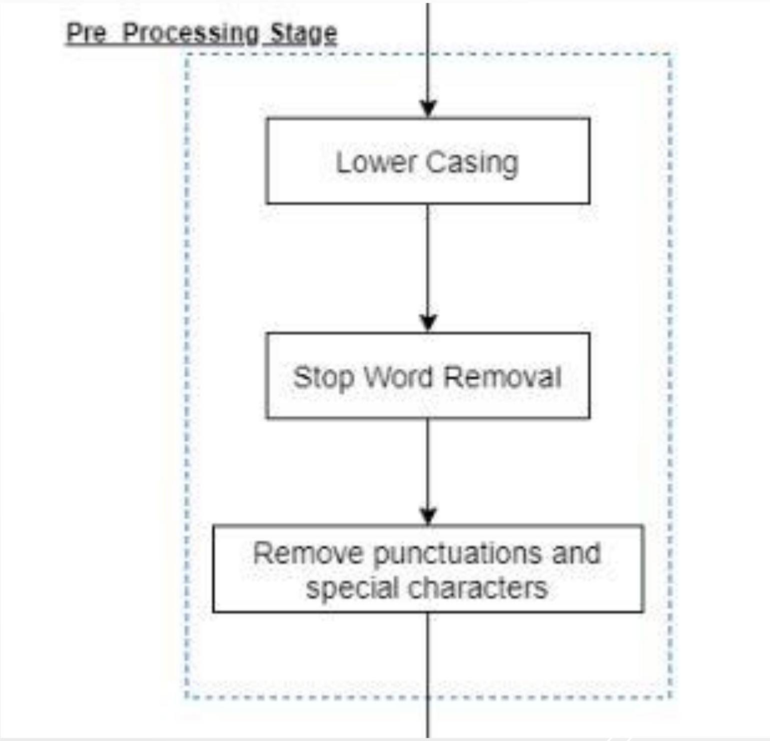


Pre-processing Stage

- Get Aggregated online content.

- Proposed pre-processing techniques:
  - ❑ Lowercasing
  - ❑ Stop Word removal
  - ❑ Remove punctuations and special characters.

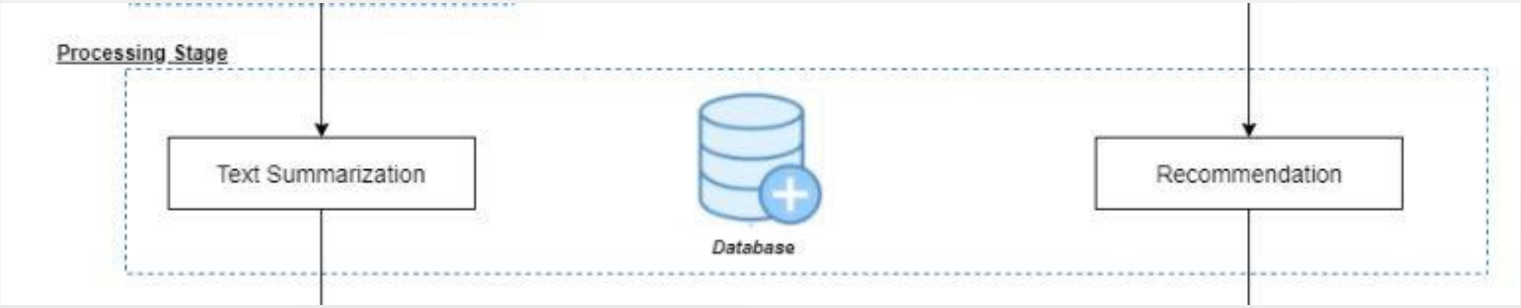
- All articles are in the same format.



Processing Stage

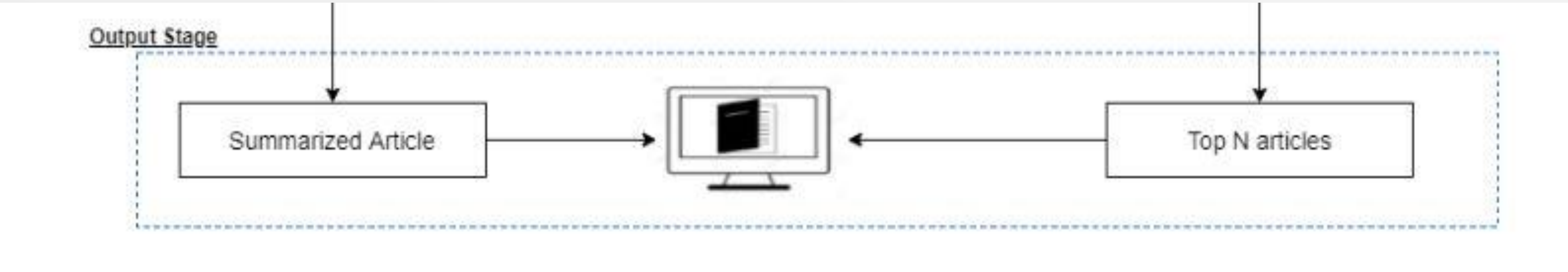
- Applying Summarization technique to the aggregated/related articles.

- Recommend articles for the search keyword/key-phrase.



Output Stage

- Getting an understandable summarized article.
- Recommended articles for the search keyword/key-phrase.

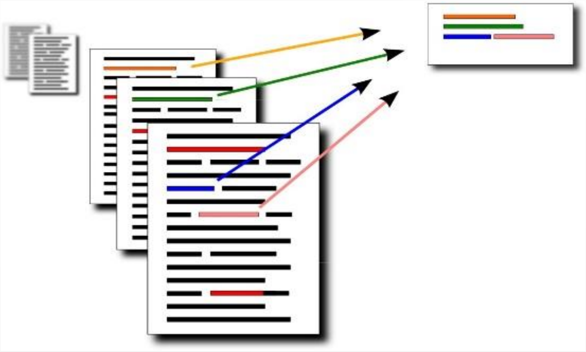


Main Algorithms

❑ Two main algorithms in the system :

1. Summarization Algorithm.
   - Text-Rank.

2. Recommendation Algorithm.
   - Content-based filter.



Recommended

Google in court over refusal to let US examine search requests
Times Online - **14 hours ago**
GOOGLE users will face US government monitoring if the American authorities win a court case aimed at getting the website to hand over copies of every search conducted.
Q&A: John Palfrey on Search Red Herring
Google rebuffs US gov't demand for search data CTV.ca
CNN - PC World - TheStreet.com - PhysOrg.com - **all 1,053 related »**

Q&A: Reggie Fils-Aime's Revolution resolutions
GameSpot - **Jan 18, 2006**
Nintendo's outspoken executive talks about his company's plan to win the next-gen console war in 2006. Sometime later this year, both Sony and Nintendo will release their next-generation video game consoles ...
Fog Growing Around Sony's PS3 Release Date TechNewsWorld
Clash of the game consoles Sydney Morning Herald
Revolution Report - kgw.com (subscription) - GameDAILY BIZ - GameSHOUT - **all 63 related »**

FDA Questions a Planned Over-the-Counter Diet Drug
New York Times - **7 hours ago**
A Food and Drug Administration reviewer offered a skeptical assessment of over-the-counter sale of the diet drug Xenical, questioning whether consumers would benefit from the product,

Summarization algorithm 1/2

What is Text-Rank?

TextRank Algorithm is a graph-based ranking algorithm that is used for articles summarization.

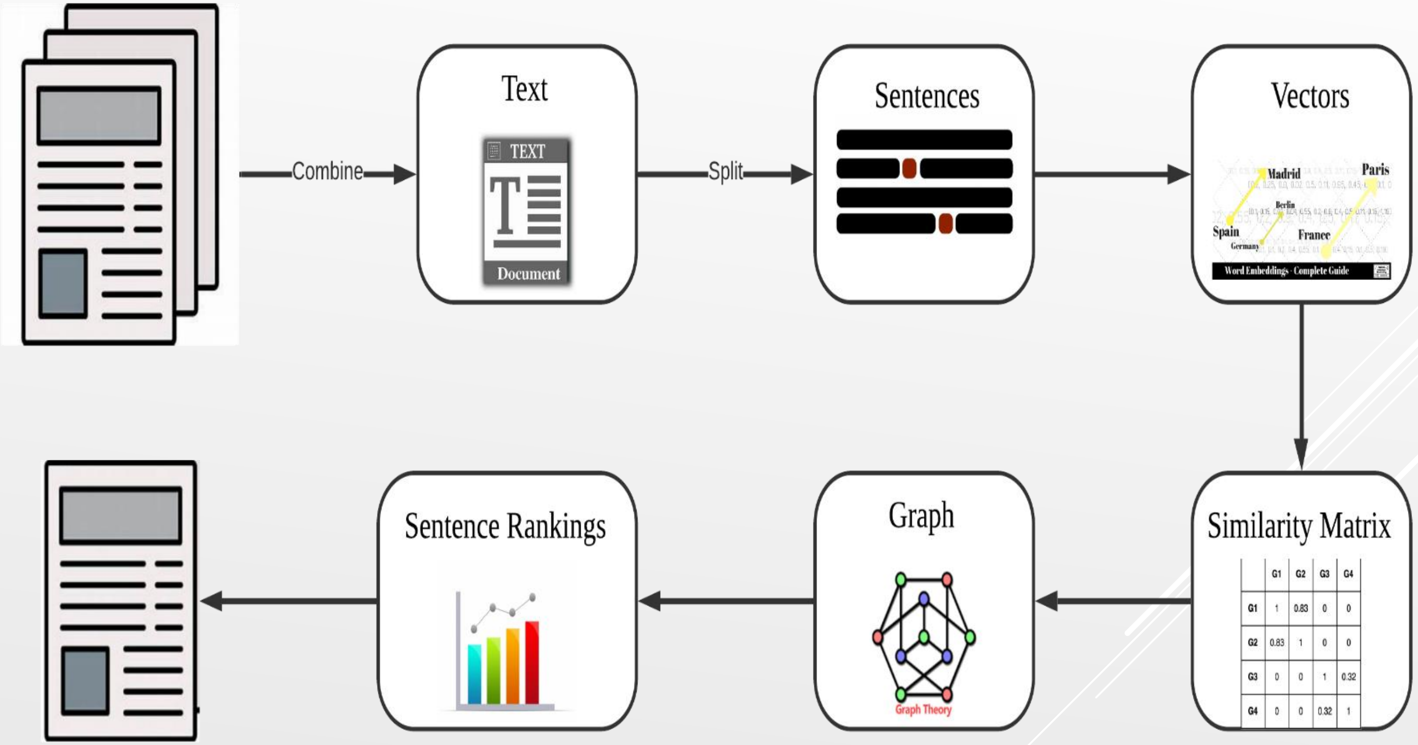
Summarization algorithm 2/2 [6][7]

- **Vectors:**

  Using global vector(GloVe)

- **Similarity Matrix:**

  Using cosine similarity



	G1	G2	G3	G4
G1	1	0.83	0	0
G2	0.83	1	0	0
G3	0	0	1	0.32
G4	0	0	0.32	1

[6]https://www.pdfs.semanticscholar.org/b20e/a99a35378f4ba09dcd33b2f897b5c8025b8e.pdf

[7]https://medium.com/the-artificial-impostor/use-textrank-to-extract-most-important-sentences-in-article-b8efc7e70b4

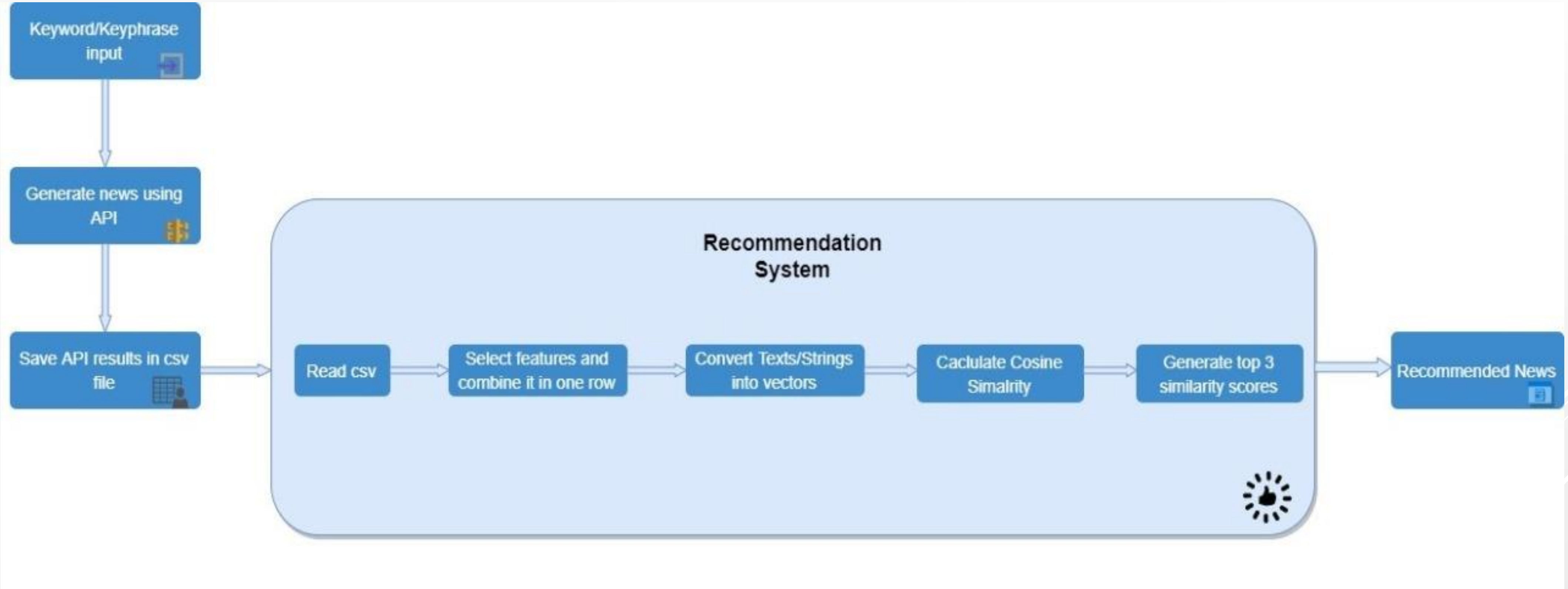
Recommendation algorithm 1/2 [8]

Content-based filter algorithm

Uses item features to recommend other items similar to user’s search.

[8] https://developers.google.com/machine-learning/recommendation/content-based/basics

Recommendation algorithm 2/2 [9]



Keyword/Keyphrase input
Generate news using API
Save API results in csv file
Recommendation System
Read csv
Select features and combine it in one row
Convert Texts/Strings into vectors
Caclulate Cosine Simalrity
Generate top 3 similarity scores
Recommended News

[9]https://medium.com/code-heroku/building-a-movie-recommendation-engine-in-python-using-scikit-learn-c7489d7cb145

Experiments & Results

❑Two experiments done on different approaches in the system :

1. Summarization experiment on two different algorithms:

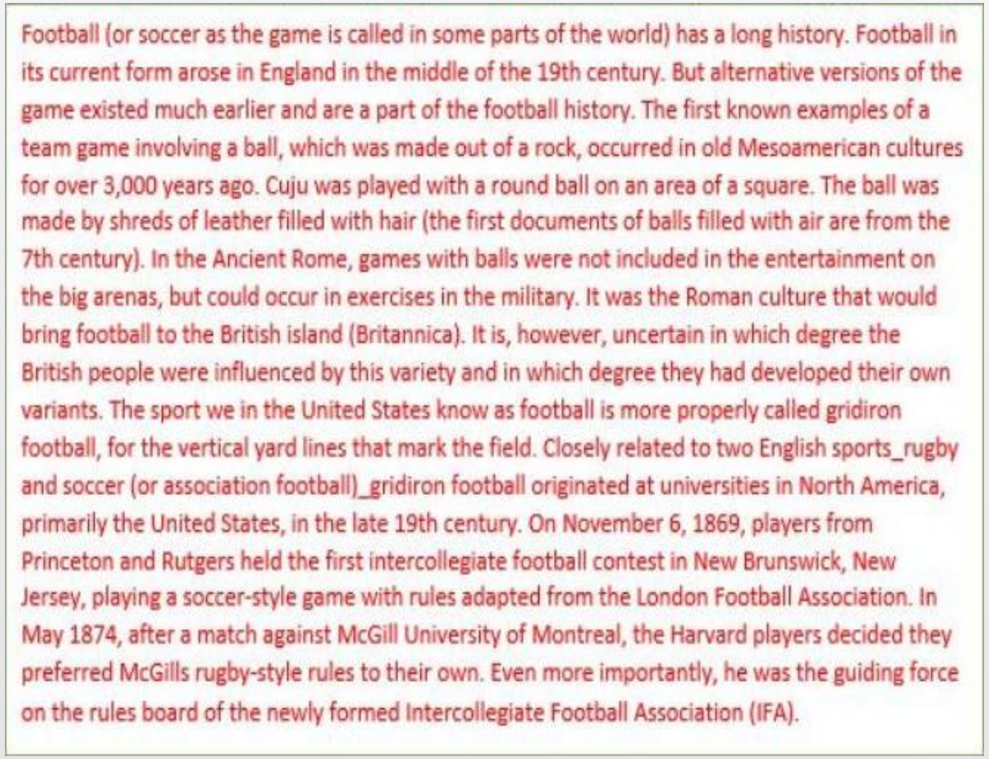
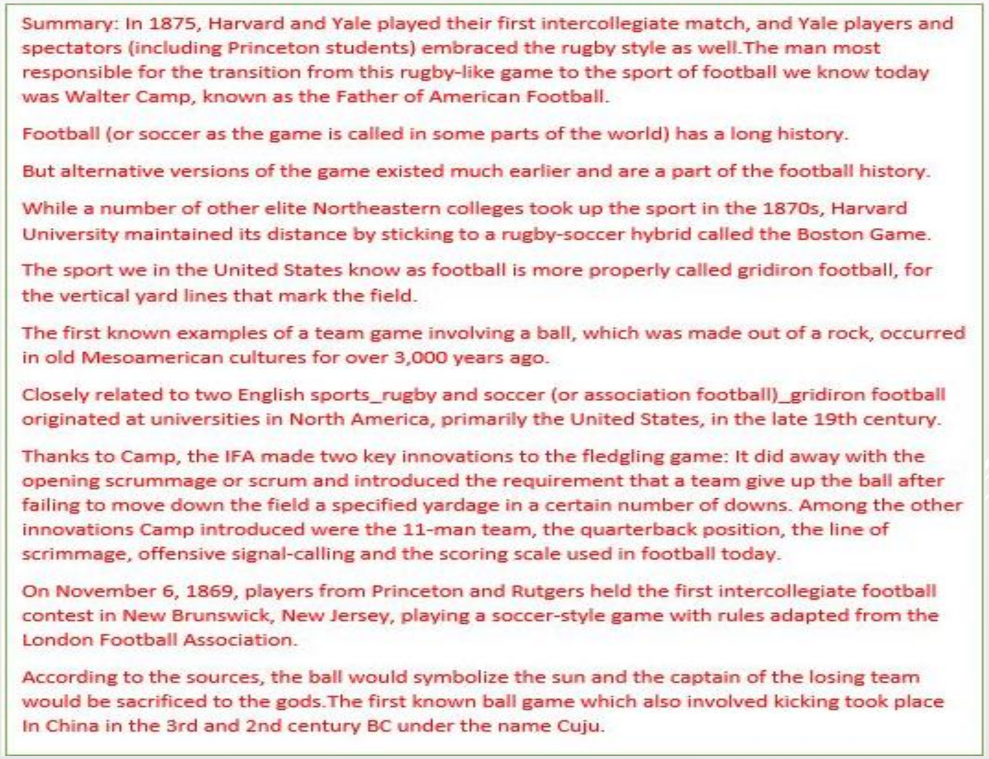
    I. Word-frequency algorithm.

    II. Text-Rank algorithm.

2. Recommendation experiment.

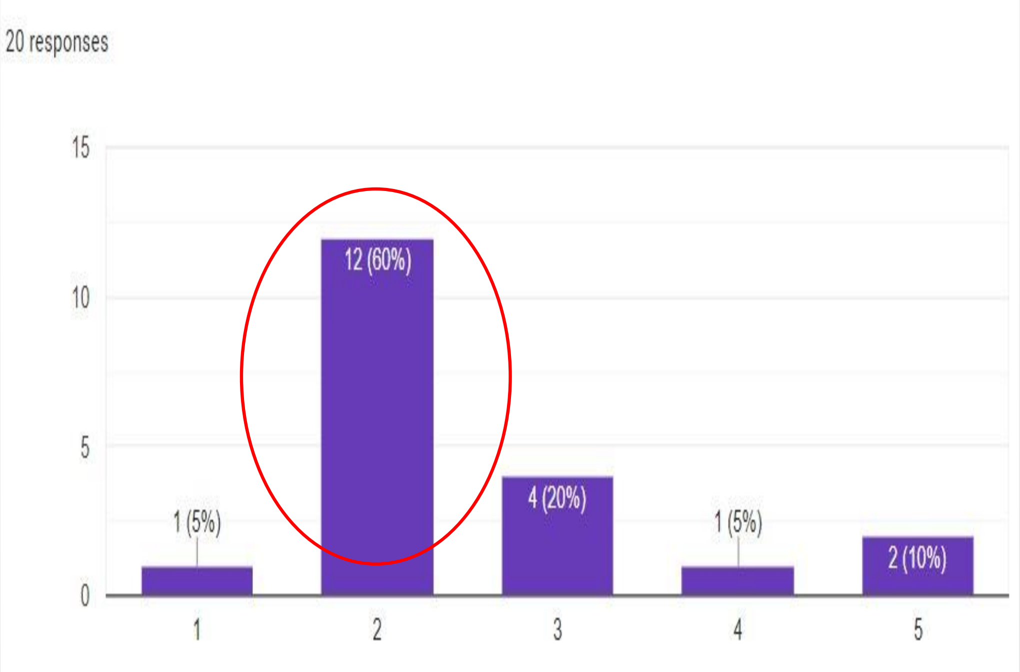
Experiment 1/2 : Summarization

- ❑ Two approaches were tested to get the most efficient summary :

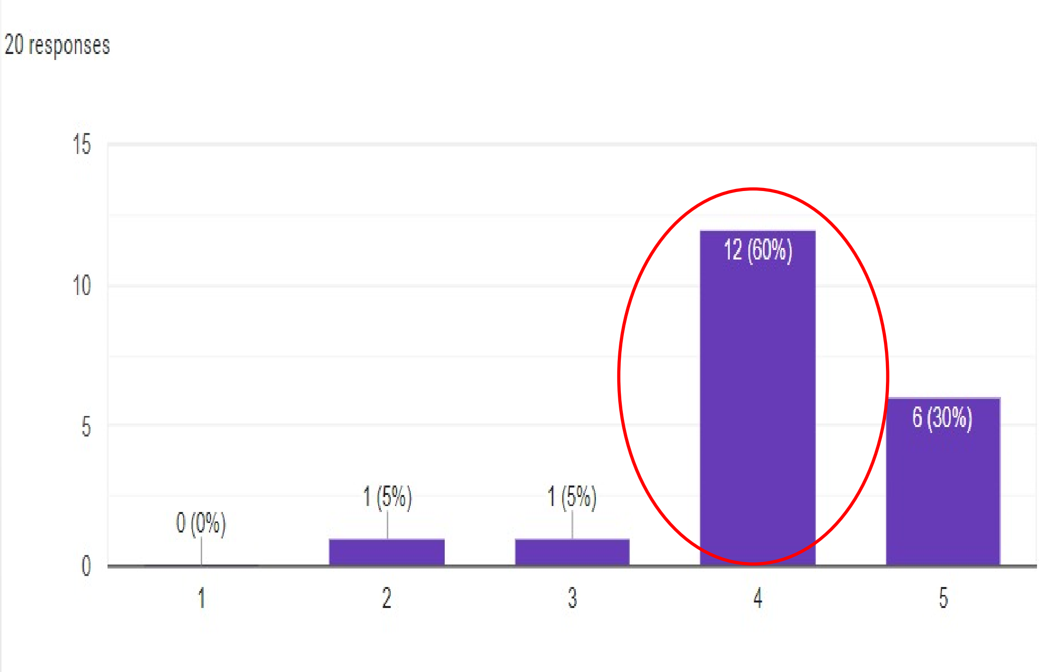
<table>
<tr><th colspan="2">Input keyword : Football</th></tr>
<tr><th>Word-frequency Summary</th><th>Text-Rank Summary</th></tr>
<tr>
<td>
Football (or soccer as the game is called in some parts of the world) has a long history. Football in its current form arose in England in the middle of the 19th century. But alternative versions of the game existed much earlier and are a part of the football history. The first known examples of a team game involving a ball, which was made out of a rock, occurred in old Mesoamerican cultures for over 3,000 years ago. Cuju was played with a round ball on an area of a square. The ball was made by shreds of leather filled with hair (the first documents of balls filled with air are from the 7th century). In the Ancient Rome, games with balls were not included in the entertainment on the big arenas, but could occur in exercises in the military. It was the Roman culture that would bring football to the British island (Britannica). It is, however, uncertain in which degree the British people were influenced by this variety and in which degree they had developed their own variants. The sport we in the United States know as football is more properly called gridiron football, for the vertical yard lines that mark the field. Closely related to two English sports_rugby and soccer (or association football)_gridiron football originated at universities in North America, primarily the United States, in the late 19th century. On November 6, 1869, players from Princeton and Rutgers held the first intercollegiate football contest in New Brunswick, New Jersey, playing a soccer-style game with rules adapted from the London Football Association. In May 1874, after a match against McGill University of Montreal, the Harvard players decided they preferred McGills rugby-style rules to their own. Even more importantly, he was the guiding force on the rules board of the newly formed Intercollegiate Football Association (IFA).</td>
<td>
Summary: In 1875, Harvard and Yale played their first intercollegiate match, and Yale players and spectators (including Princeton students) embraced the rugby style as well.The man most responsible for the transition from this rugby-like game to the sport of football we know today was Walter Camp, known as the Father of American Football.
Football (or soccer as the game is called in some parts of the world) has a long history.
But alternative versions of the game existed much earlier and are a part of the football history.
While a number of other elite Northeastern colleges took up the sport in the 1870s, Harvard University maintained its distance by sticking to a rugby-soccer hybrid called the Boston Game.
The sport we in the United States know as football is more properly called gridiron football, for the vertical yard lines that mark the field.
The first known examples of a team game involving a ball, which was made out of a rock, occurred in old Mesoamerican cultures for over 3,000 years ago.
Closely related to two English sports_rugby and soccer (or association football)_gridiron football originated at universities in North America, primarily the United States, in the late 19th century.
Thanks to Camp, the IFA made two key innovations to the fledgling game: It did away with the opening scrummage or scrum and introduced the requirement that a team give up the ball after failing to move down the field a specified yardage in a certain number of downs. Among the other innovations Camp introduced were the 11-man team, the quarterback position, the line of scrimmage, offensive signal-calling and the scoring scale used in football today.
On November 6, 1869, players from Princeton and Rutgers held the first intercollegiate football contest in New Brunswick, New Jersey, playing a soccer-style game with rules adapted from the London Football Association.
According to the sources, the ball would symbolize the sun and the captain of the losing team would be sacrificed to the gods.The first known ball game which also involved kicking took place In China in the 3rd and 2nd century BC under the name Cuju.</td>
</tr>
</table>

Experiment 1/2 : Results

- A survey was applied using our social network, asking to rate the two summaries out of 5.



Word-Frequency chart



Text-Rank chart

Experiment 1/2 : Results

- ❑ To further emphasize that, the output summary from the Text-Rank algorithm was revised by an expert besides the normal readers rating.
- ❑ The feedback considers that the output summary fulfills all the requirements of a good summary such as:
  - The length is about 10% of the original.
  - Short paragraphs that contain the key ideas and to the point.
  - Could be read and clearly understood without referring to the original article.
  - Used the appropriate language just like that used in the original article.
- ❑ Text-Rank algorithm was the chosen approach to be applied in the summarization system over Word Frequency algorithm. The reason behind applying Text-Rank algorithm was simply that Text-Rank gives more efficient and understandable summary for the reader.

Experiment 2/2 : Recommendation

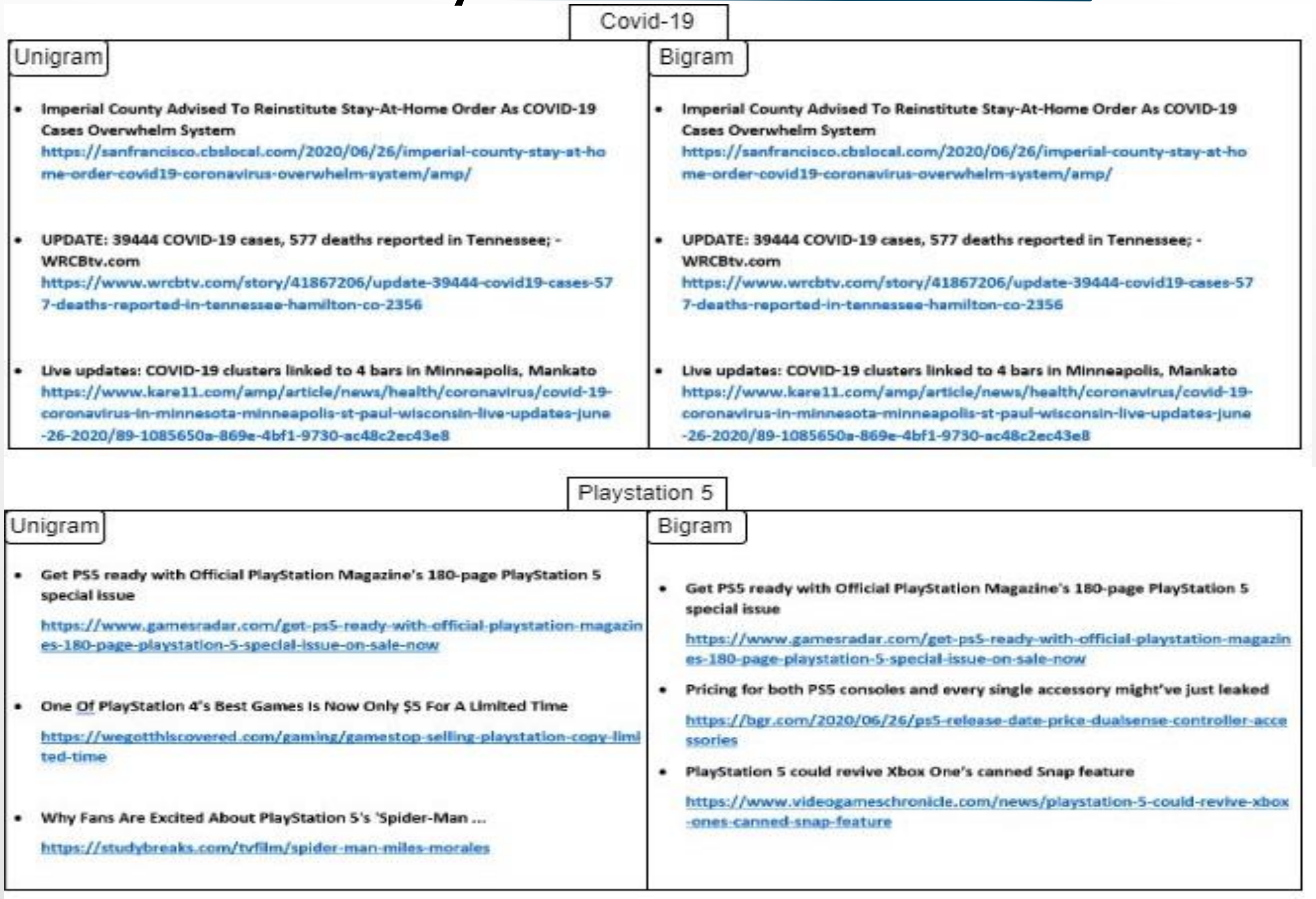
- In this experiment, we have compared between **n-grams** **(Uni-gram and Bi-gram)** using count vectorizer to get the best results.

Definitions :

❑ **Uni-gram** : The occurrence of each word is independent of its previous word.

❑ **Bi-gram** : The occurrence of each word depends only on its previous word.

Experiment 2/2 : Results



Covid-19

Unigram

- Imperial County Advised To Reinstitute Stay-At-Home Order As COVID-19 Cases Overwhelm System
  https://sanfrancisco.cbslocal.com/2020/06/26/imperial-county-stay-at-home-order-covid19-coronavirus-overwhelm-system/amp/
- UPDATE: 39444 COVID-19 cases, 577 deaths reported in Tennessee; - WRCBtv.com
  https://www.wrcbtv.com/story/41867206/update-39444-covid19-cases-577-deaths-reported-in-tennessee-hamilton-co-2356
- Live updates: COVID-19 clusters linked to 4 bars in Minneapolis, Mankato
  https://www.kare11.com/amp/article/news/health/coronavirus/covid-19-coronavirus-in-minnesota-minneapolis-st-paul-wisconsin-live-updates-june-26-2020/89-1085650a-869e-4bf1-9730-ac48c2ec43e8

Bigram

- Imperial County Advised To Reinstitute Stay-At-Home Order As COVID-19 Cases Overwhelm System
  https://sanfrancisco.cbslocal.com/2020/06/26/imperial-county-stay-at-home-order-covid19-coronavirus-overwhelm-system/amp/
- UPDATE: 39444 COVID-19 cases, 577 deaths reported in Tennessee; - WRCBtv.com
  https://www.wrcbtv.com/story/41867206/update-39444-covid19-cases-577-deaths-reported-in-tennessee-hamilton-co-2356
- Live updates: COVID-19 clusters linked to 4 bars in Minneapolis, Mankato
  https://www.kare11.com/amp/article/news/health/coronavirus/covid-19-coronavirus-in-minnesota-minneapolis-st-paul-wisconsin-live-updates-june-26-2020/89-1085650a-869e-4bf1-9730-ac48c2ec43e8

Playstation 5

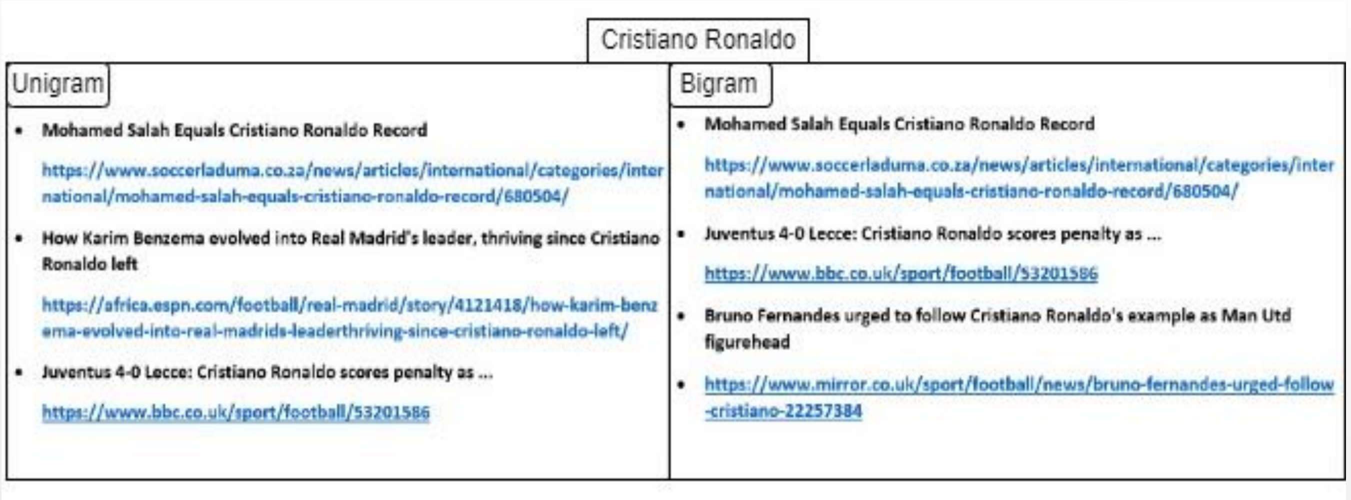
Unigram

- Get PS5 ready with Official PlayStation Magazine's 180-page PlayStation 5 special issue
  https://www.gamesradar.com/get-ps5-ready-with-official-playstation-magazines-180-page-playstation-5-special-issue-on-sale-now
- One Of PlayStation 4's Best Games Is Now Only $5 For A Limited Time
  https://wegotthiscovered.com/gaming/gamestop-selling-playstation-copy-limited-time
- Why Fans Are Excited About PlayStation 5's 'Spider-Man ...
  https://studybreaks.com/tvfilm/spider-man-miles-morales

Bigram

- Get PS5 ready with Official PlayStation Magazine's 180-page PlayStation 5 special issue
  https://www.gamesradar.com/get-ps5-ready-with-official-playstation-magazines-180-page-playstation-5-special-issue-on-sale-now
- Pricing for both PS5 consoles and every single accessory might've just leaked
  https://bgr.com/2020/06/26/ps5-release-date-price-dualsense-controller-accessories
- PlayStation 5 could revive Xbox One's canned Snap feature
  https://www.videogameschronicle.com/news/playstation-5-could-revive-xbox-ones-canned-snap-feature

Experiment 2/2 : Results



Cristiano Ronaldo

Unigram

- Mohamed Salah Equals Cristiano Ronaldo Record

  https://www.soccerladuma.co.za/news/articles/international/categories/international/mohamed-salah-equals-cristiano-ronaldo-record/680504/

- How Karim Benzema evolved into Real Madrid's leader, thriving since Cristiano Ronaldo left

  https://africa.espn.com/football/real-madrid/story/4121418/how-karim-benzema-evolved-into-real-madrids-leaderthriving-since-cristiano-ronaldo-left/

- Juventus 4-0 Lecce: Cristiano Ronaldo scores penalty as ...

  https://www.bbc.co.uk/sport/football/53201586

Bigram

- Mohamed Salah Equals Cristiano Ronaldo Record

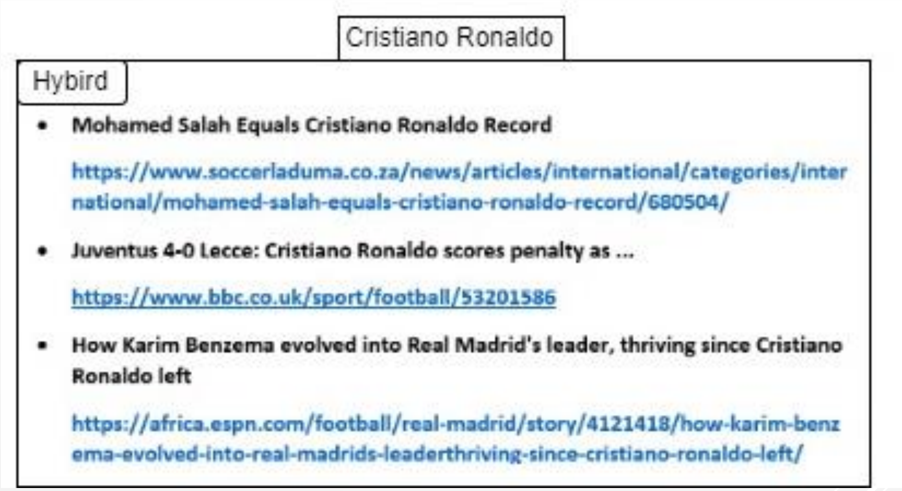
  https://www.soccerladuma.co.za/news/articles/international/categories/international/mohamed-salah-equals-cristiano-ronaldo-record/680504/

- Juventus 4-0 Lecce: Cristiano Ronaldo scores penalty as ...

  https://www.bbc.co.uk/sport/football/53201586

- Bruno Fernandes urged to follow Cristiano Ronaldo's example as Man Utd figurehead

- https://www.mirror.co.uk/sport/football/news/bruno-fernandes-urged-follow-cristiano-22257384



Cristiano Ronaldo

Hybird

- Mohamed Salah Equals Cristiano Ronaldo Record

  https://www.soccerladuma.co.za/news/articles/international/categories/international/mohamed-salah-equals-cristiano-ronaldo-record/680504/

- Juventus 4-0 Lecce: Cristiano Ronaldo scores penalty as ...

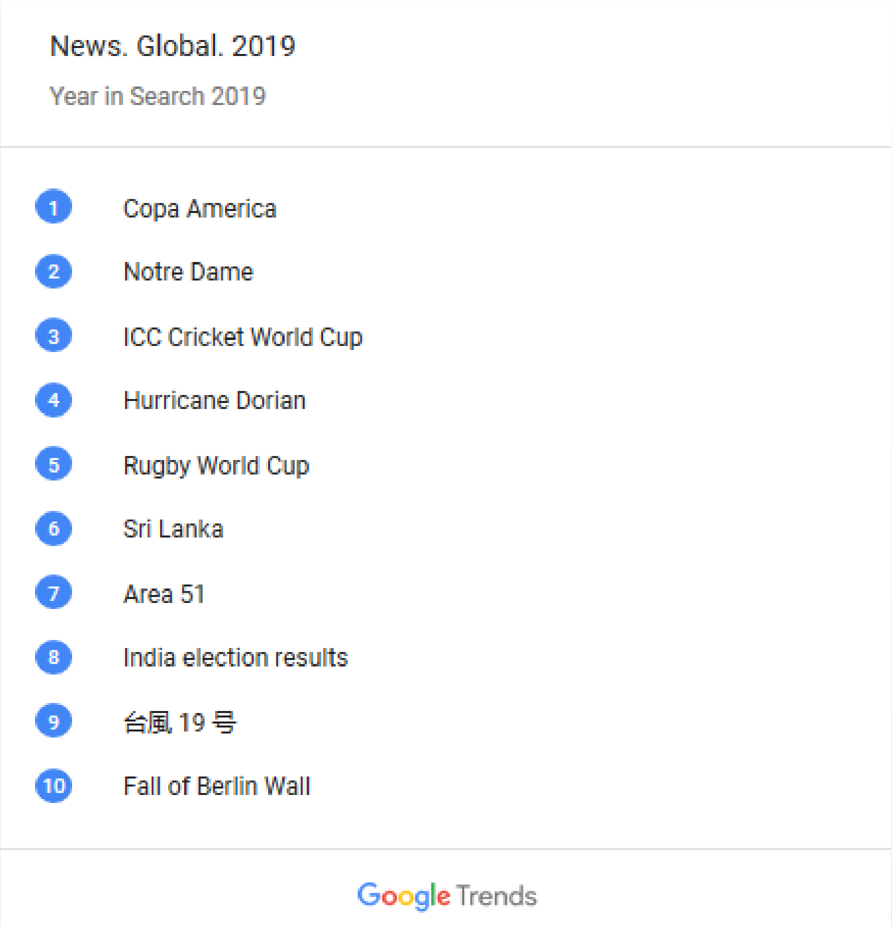
  https://www.bbc.co.uk/sport/football/53201586

- How Karim Benzema evolved into Real Madrid's leader, thriving since Cristiano Ronaldo left

  https://africa.espn.com/football/real-madrid/story/4121418/how-karim-benzema-evolved-into-real-madrids-leaderthriving-since-cristiano-ronaldo-left/

As for the following results, we used both **Uni-gram** and **Bi-gram** as an **hybrid** solution for this experiment.

Experiment 2/2 : Results [10]



News. Global. 2019

Year in Search 2019

1. Copa America
2. Notre Dame
3. ICC Cricket World Cup
4. Hurricane Dorian
5. Rugby World Cup
6. Sri Lanka
7. Area 51
8. India election results
9. 台風 19 号
10. Fall of Berlin Wall

Google Trends

- According to Google News Search in 2019, most of the user's common search contains two words.

[10]https://trends.google.com/trends/yis/2019/GLOBAL/

Achievements

Published paper entitled “News Aggregator And Efficient Summarization System” in *International Journal of Advanced Computer Science and Applications (IJACSA), Vol. 11, No. 6,2020 .*

SAI

The Science and Information Organization

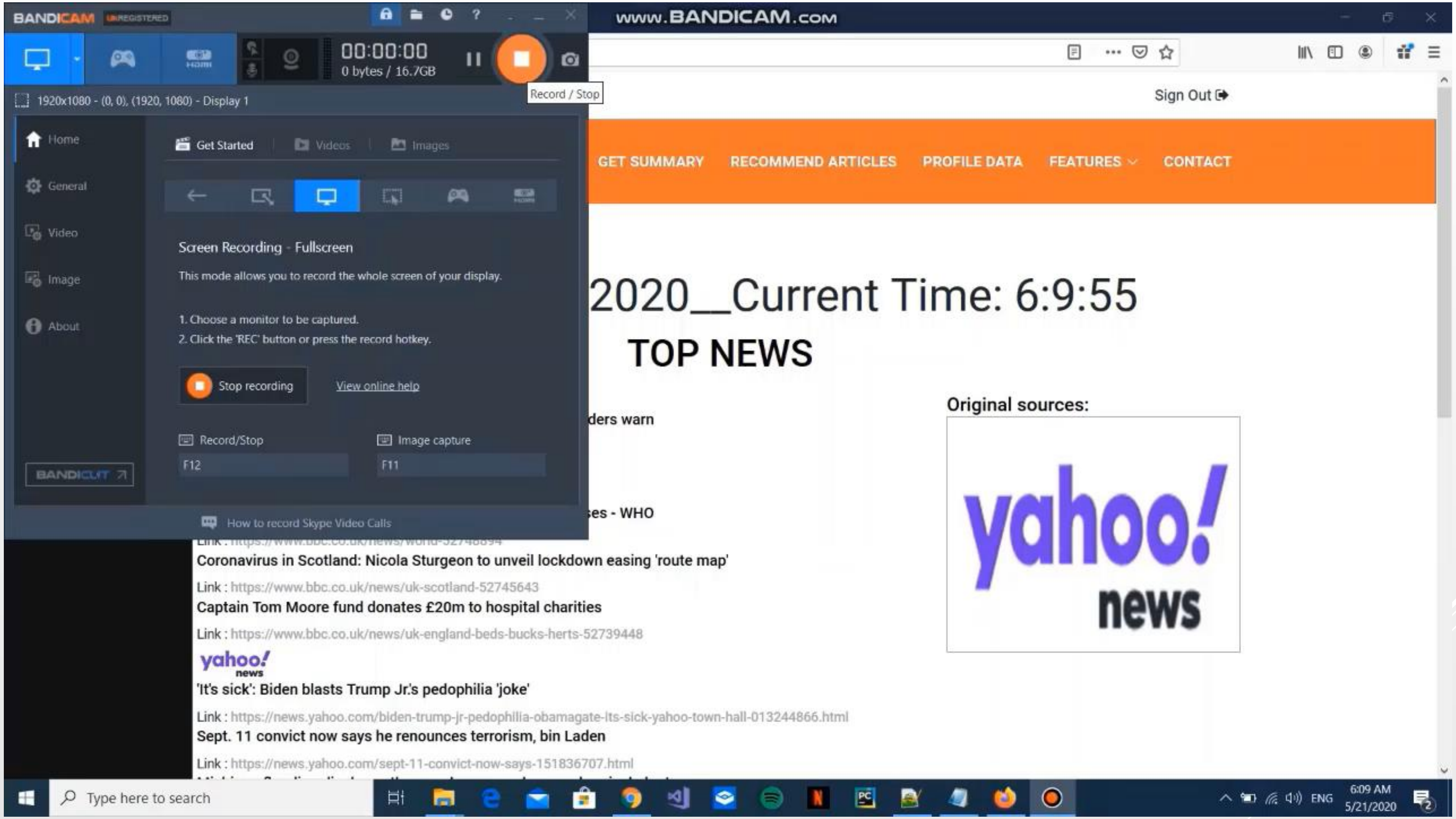
WEB OF SCIENCE℠

THOMSON REUTERS

Scopus®

https://thesai.org/Publications/ViewPaper?Volume=11&Issue=6&Code=IJACSA&SerialNo=77

Demo 1/2



1920x1080 - (0, 0), (1920, 1080) - Display 1

Screen Recording - Fullscreen

This mode allows you to record the whole screen of your display.

1. Choose a monitor to be captured.
2. Click the 'REC' button or press the record hotkey.

Record/Stop: F12

Image capture: F11

How to record Skype Video Calls

2020__Current Time: 6:9:55

TOP NEWS

ders warn

es - WHO

Link : https://www.bbc.co.uk/news/world-52748894

Coronavirus in Scotland: Nicola Sturgeon to unveil lockdown easing 'route map'

Link : https://www.bbc.co.uk/news/uk-scotland-52745643

Captain Tom Moore fund donates £20m to hospital charities

Link : https://www.bbc.co.uk/news/uk-england-beds-bucks-herts-52739448

'It's sick': Biden blasts Trump Jr.'s pedophilia 'joke'

Link : https://news.yahoo.com/biden-trump-jr-pedophilia-obamagate-its-sick-yahoo-town-hall-013244866.html

Sept. 11 convict now says he renounces terrorism, bin Laden

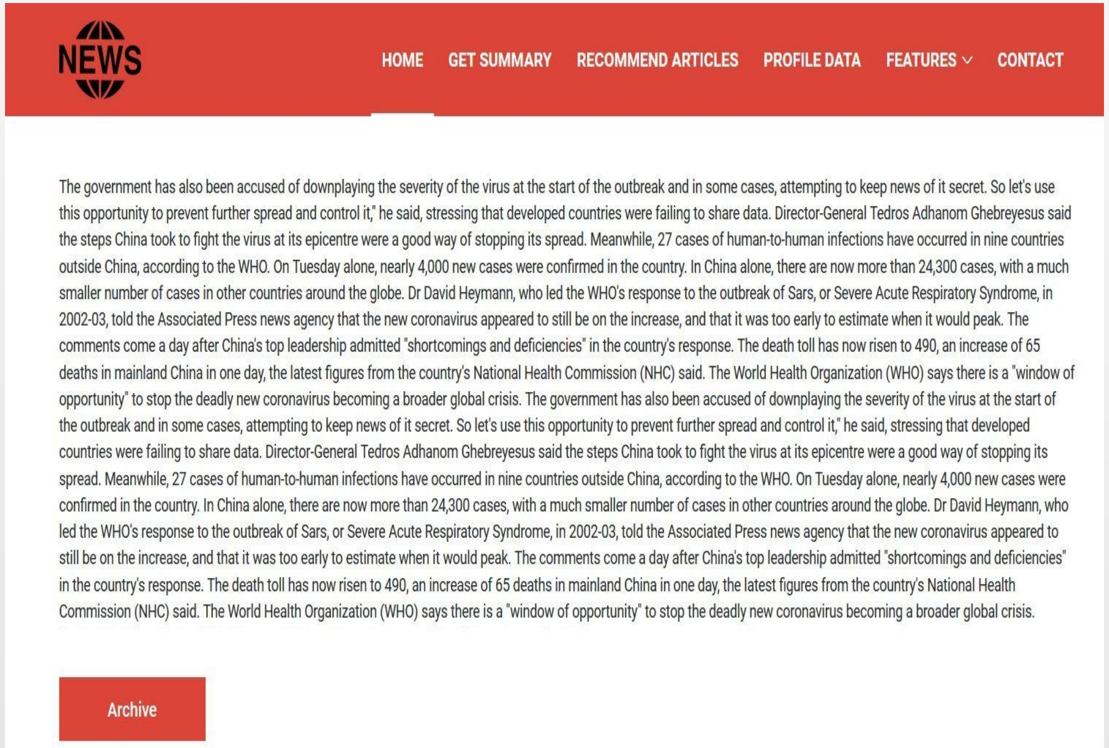
Link : https://news.yahoo.com/sept-11-convict-now-says-151836707.html

Original sources:

Demo 2/2

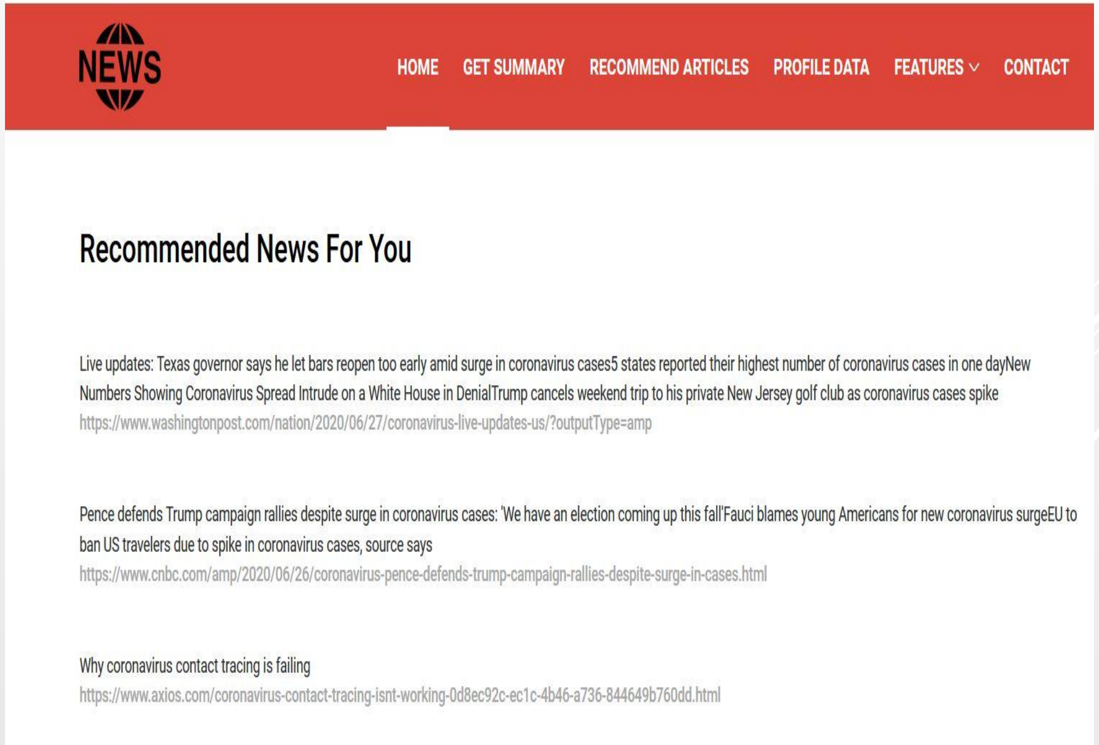
Input keyword: Coronavirus

Summary



The government has also been accused of downplaying the severity of the virus at the start of the outbreak and in some cases, attempting to keep news of it secret. So let's use this opportunity to prevent further spread and control it," he said, stressing that developed countries were failing to share data. Director-General Tedros Adhanom Ghebreyesus said the steps China took to fight the virus at its epicentre were a good way of stopping its spread. Meanwhile, 27 cases of human-to-human infections have occurred in nine countries outside China, according to the WHO. On Tuesday alone, nearly 4,000 new cases were confirmed in the country. In China alone, there are now more than 24,300 cases, with a much smaller number of cases in other countries around the globe. Dr David Heymann, who led the WHO's response to the outbreak of Sars, or Severe Acute Respiratory Syndrome, in 2002-03, told the Associated Press news agency that the new coronavirus appeared to still be on the increase, and that it was too early to estimate when it would peak. The comments come a day after China's top leadership admitted "shortcomings and deficiencies" in the country's response. The death toll has now risen to 490, an increase of 65 deaths in mainland China in one day, the latest figures from the country's National Health Commission (NHC) said. The World Health Organization (WHO) says there is a "window of opportunity" to stop the deadly new coronavirus becoming a broader global crisis. The government has also been accused of downplaying the severity of the virus at the start of the outbreak and in some cases, attempting to keep news of it secret. So let's use this opportunity to prevent further spread and control it," he said, stressing that developed countries were failing to share data. Director-General Tedros Adhanom Ghebreyesus said the steps China took to fight the virus at its epicentre were a good way of stopping its spread. Meanwhile, 27 cases of human-to-human infections have occurred in nine countries outside China, according to the WHO. On Tuesday alone, nearly 4,000 new cases were confirmed in the country. In China alone, there are now more than 24,300 cases, with a much smaller number of cases in other countries around the globe. Dr David Heymann, who led the WHO's response to the outbreak of Sars, or Severe Acute Respiratory Syndrome, in 2002-03, told the Associated Press news agency that the new coronavirus appeared to still be on the increase, and that it was too early to estimate when it would peak. The comments come a day after China's top leadership admitted "shortcomings and deficiencies" in the country's response. The death toll has now risen to 490, an increase of 65 deaths in mainland China in one day, the latest figures from the country's National Health Commission (NHC) said. The World Health Organization (WHO) says there is a "window of opportunity" to stop the deadly new coronavirus becoming a broader global crisis.

Recommended Links



Recommended News For You

Live updates: Texas governor says he let bars reopen too early amid surge in coronavirus cases5 states reported their highest number of coronavirus cases in one dayNew Numbers Showing Coronavirus Spread Intrude on a White House in DenialTrump cancels weekend trip to his private New Jersey golf club as coronavirus cases spike
https://www.washingtonpost.com/nation/2020/06/27/coronavirus-live-updates-us/?outputType=amp

Pence defends Trump campaign rallies despite surge in coronavirus cases: 'We have an election coming up this fall'Fauci blames young Americans for new coronavirus surgeEU to ban US travelers due to spike in coronavirus cases, source says
https://www.cnbc.com/amp/2020/06/26/coronavirus-pence-defends-trump-campaign-rallies-despite-surge-in-cases.html

Why coronavirus contact tracing is failing
https://www.axios.com/coronavirus-contact-tracing-isnt-working-0d8ec92c-ec1c-4b46-a736-844649b760dd.html

Users’ Feedback

Any Questions ?

Thank You!

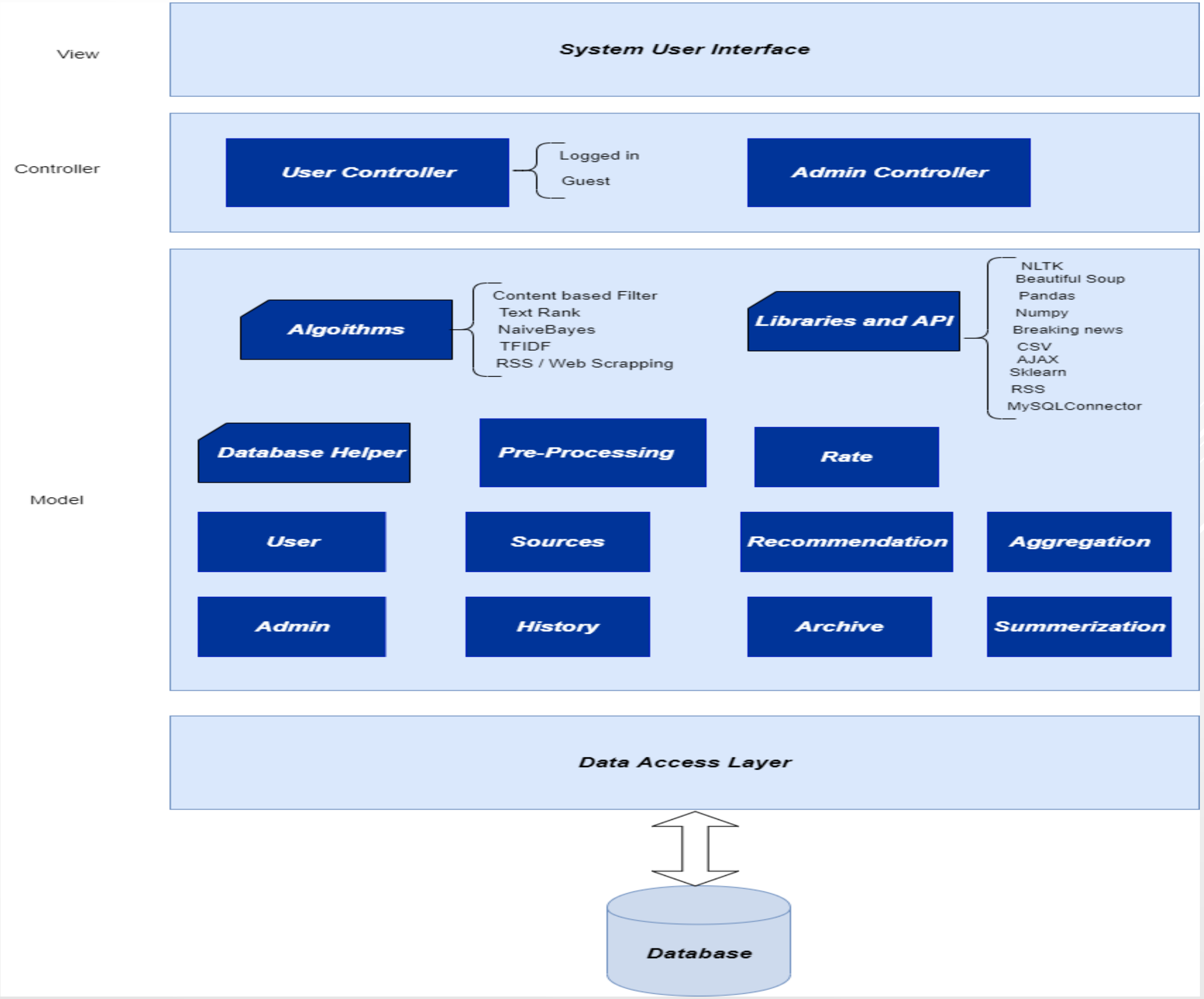
APPENDIX

Tools used

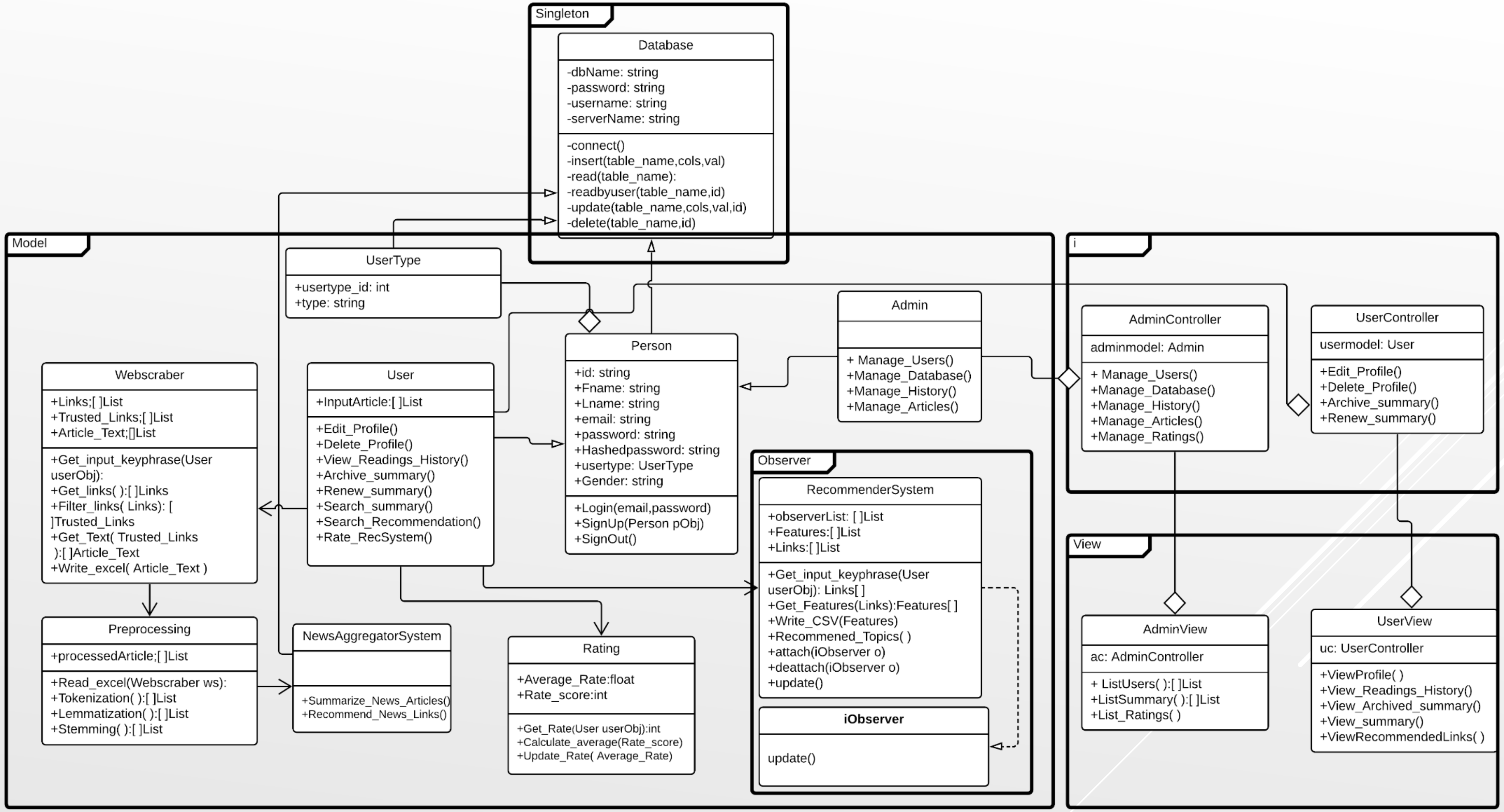
Future directions:

- In the near future, we aim that our system can deal with all types of media like photos or videos in summarization and recommendation phases by image processing techniques.

Architecture Diagram



Class Diagram



Database

-dbName: string
-password: string
-username: string
-serverName: string

-connect()
-insert(table_name,cols,val)
-read(table_name):
-readbyuser(table_name,id)
-update(table_name,cols,val,id)
-delete(table_name,id)

UserType

+usertype_id: int
+type: string

Webscraber

+Links;[ ]List
+Trusted_Links;[ ]List
+Article_Text;[]List

+Get_input_keyphrase(User userObj):
+Get_links( ):[ ]Links
+Filter_links(Links): [ ]Trusted_Links
+Get_Text(Trusted_Links):[ ]Article_Text
+Write_excel(Article_Text)

User

+InputArticle:[ ]List

+Edit_Profile()
+Delete_Profile()
+View_Readings_History()
+Archive_summary()
+Renew_summary()
+Search_summary()
+Search_Recommendation()
+Rate_RecSystem()

Person

+id: string
+Fname: string
+Lname: string
+email: string
+password: string
+Hashedpassword: string
+usertype: UserType
+Gender: string

+Login(email,password)
+SignUp(Person pObj)
+SignOut()

Admin

+ Manage_Users()
+Manage_Database()
+Manage_History()
+Manage_Articles()

Preprocessing

+processedArticle;[ ]List

+Read_excel(Webscraber ws):
+Tokenization( ):[ ]List
+Lemmatization( ):[ ]List
+Stemming( ):[ ]List

NewsAggregatorSystem

+Summarize_News_Articles()
+Recommend_News_Links()

Rating

+Average_Rate:float
+Rate_score:int

+Get_Rate(User userObj):int
+Calculate_average(Rate_score)
+Update_Rate(Average_Rate)

RecommenderSystem

+observerList: [ ]List
+Features:[ ]List
+Links:[ ]List

+Get_input_keyphrase(User userObj): Links[ ]
+Get_Features(Links):Features[ ]
+Write_CSV(Features)
+Recommened_Topics( )
+attach(iObserver o)
+deattach(iObserver o)
+update()

iObserver

update()

AdminController

adminmodel: Admin

+ Manage_Users()
+Manage_Database()
+Manage_History()
+Manage_Articles()
+Manage_Ratings()

UserController

usermodel: User

+Edit_Profile()
+Delete_Profile()
+Archive_summary()
+Renew_summary()

AdminView

ac: AdminController

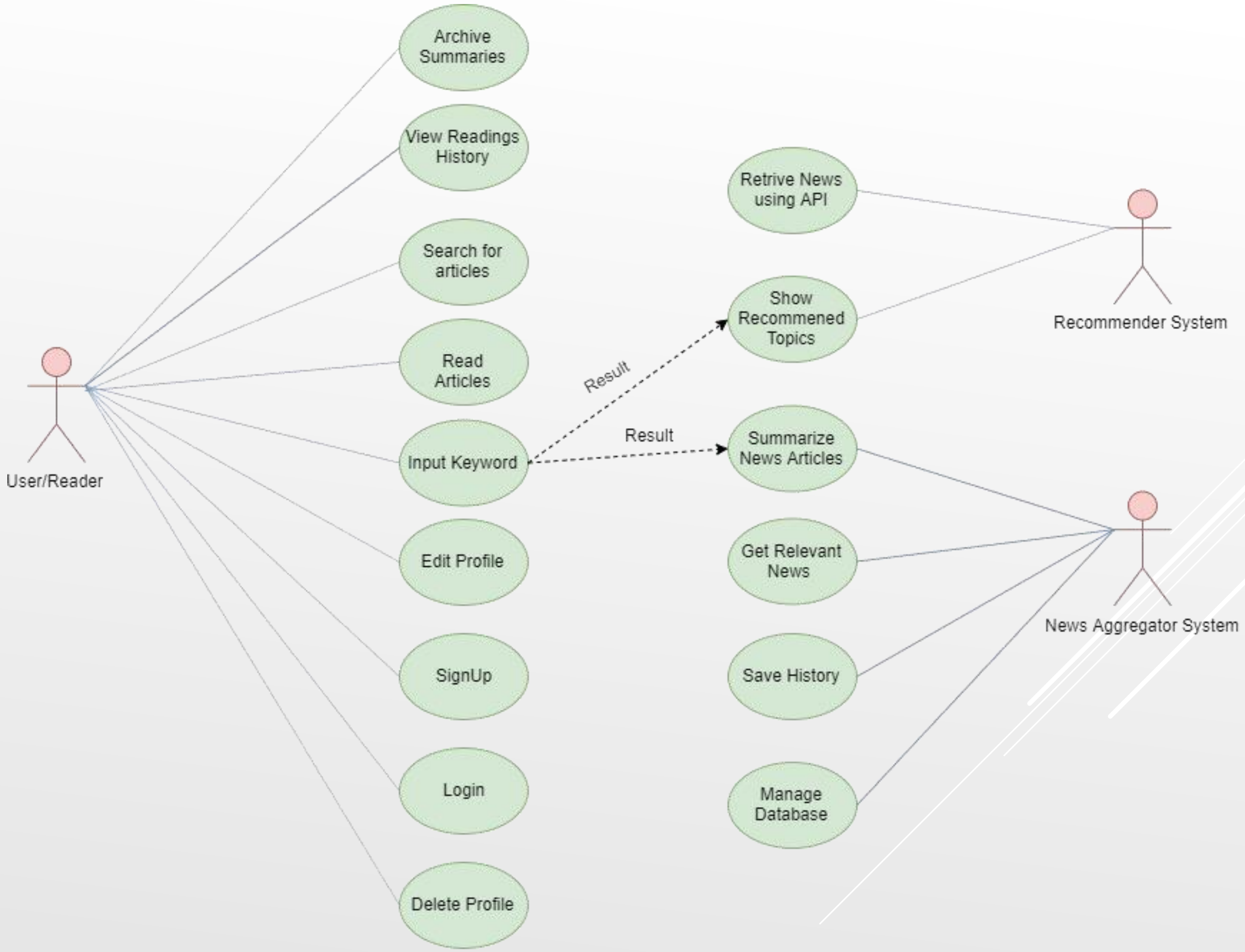
+ ListUsers( ):[ ]List
+ListSummary( ):[ ]List
+List_Ratings( )

UserView

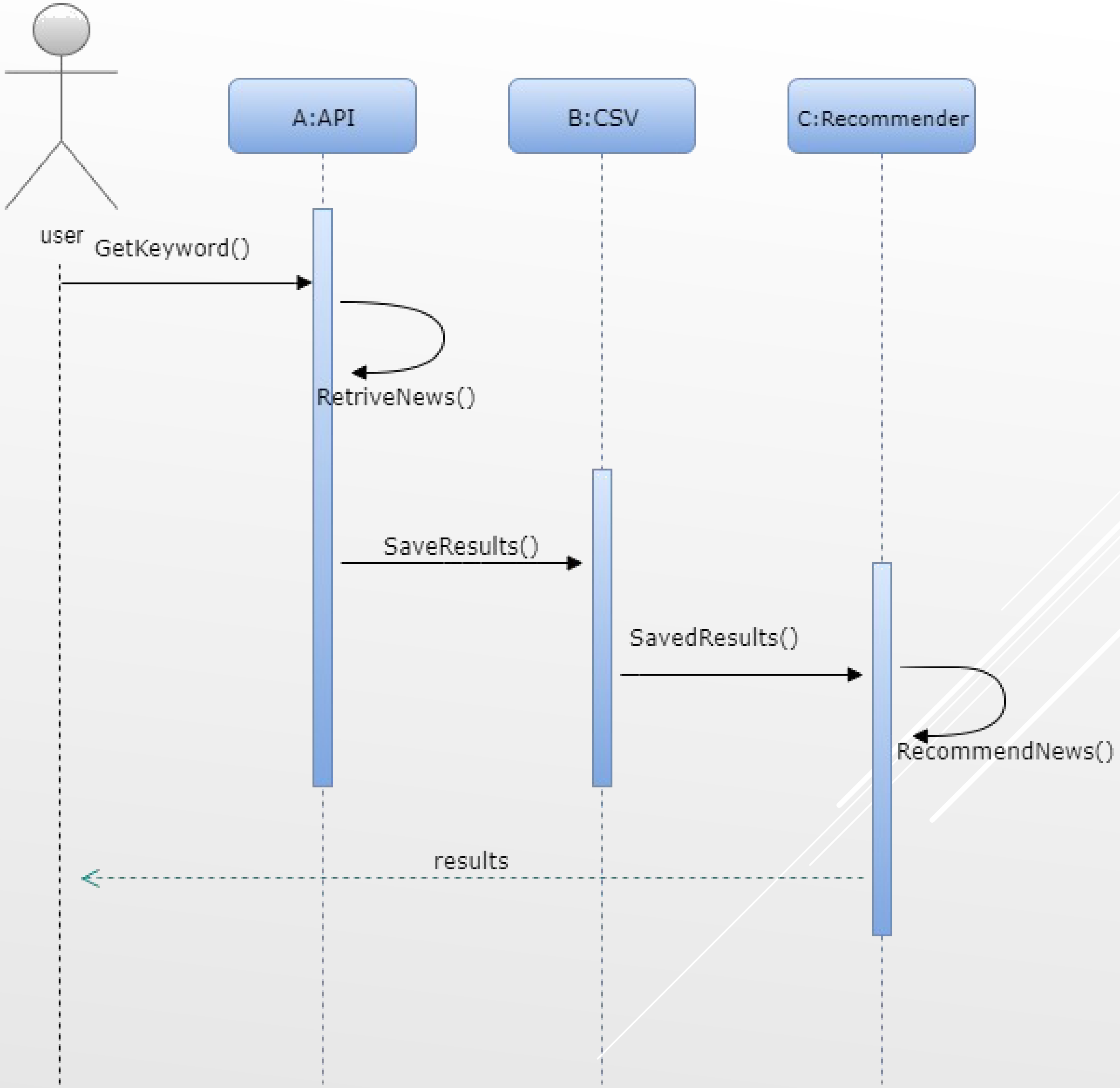
uc: UserController

+ViewProfile( )
+View_Readings_History()
+View_Archived_summary()
+View_summary()
+ViewRecommendedLinks( )

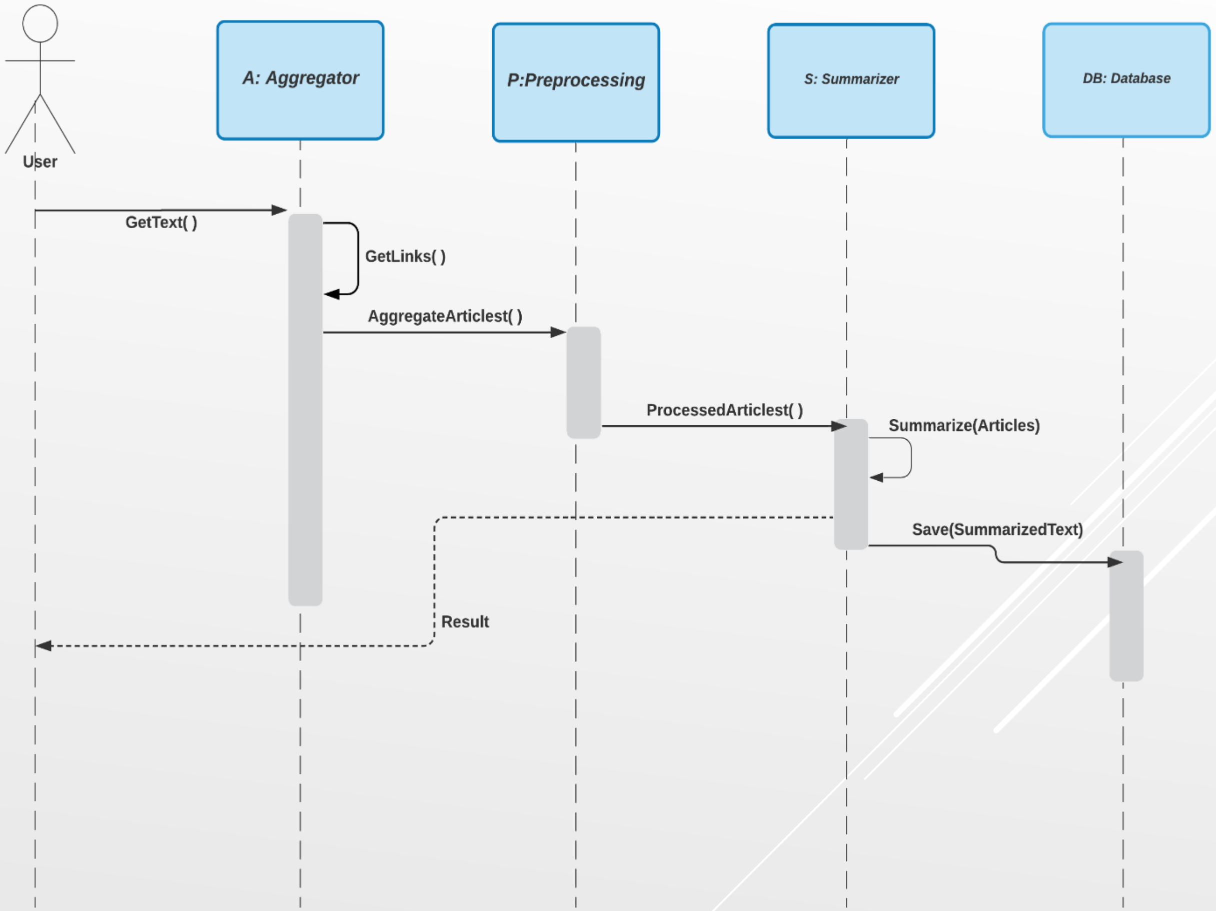
Use-case Diagram



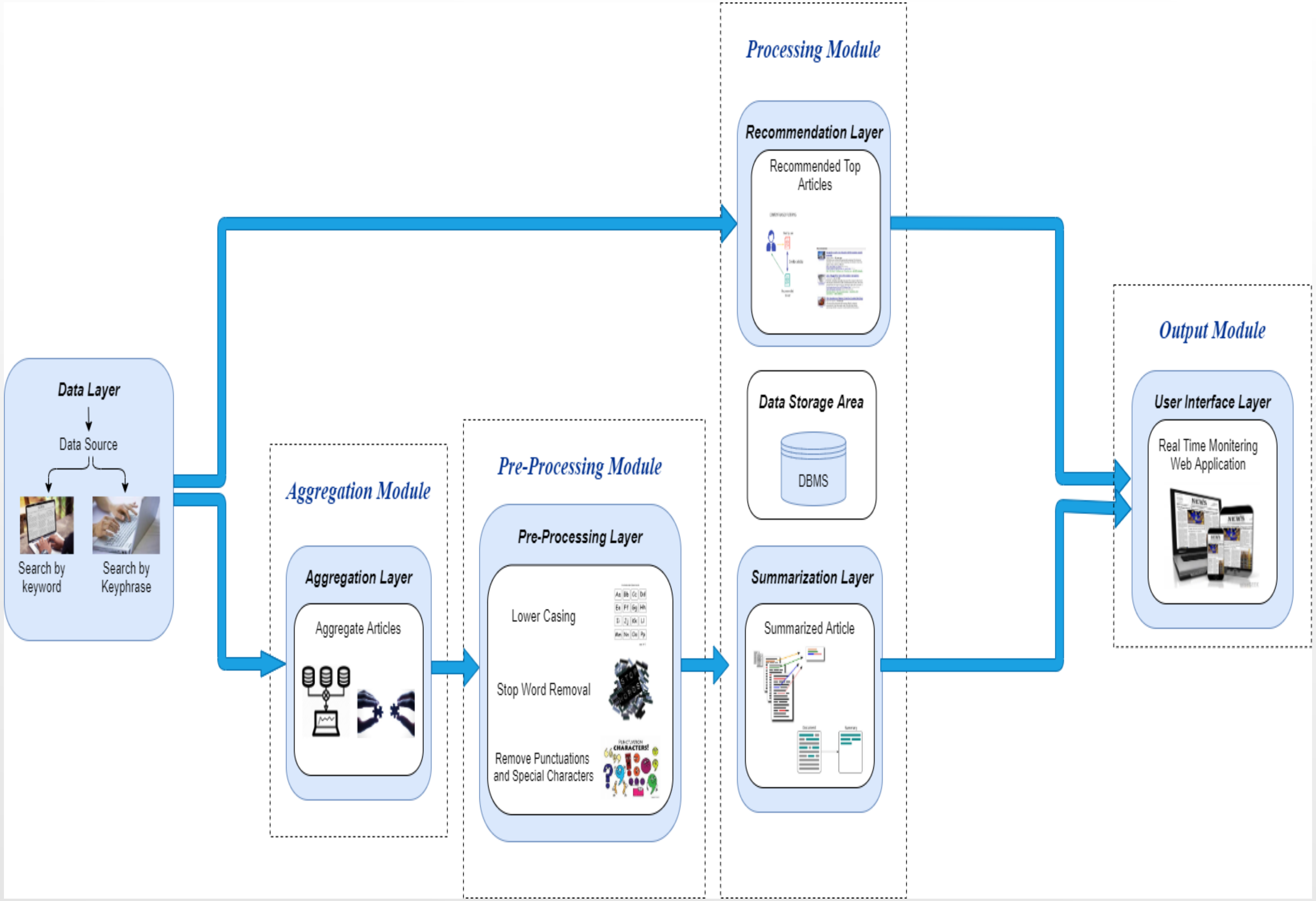
Sequence Diagram 1/2



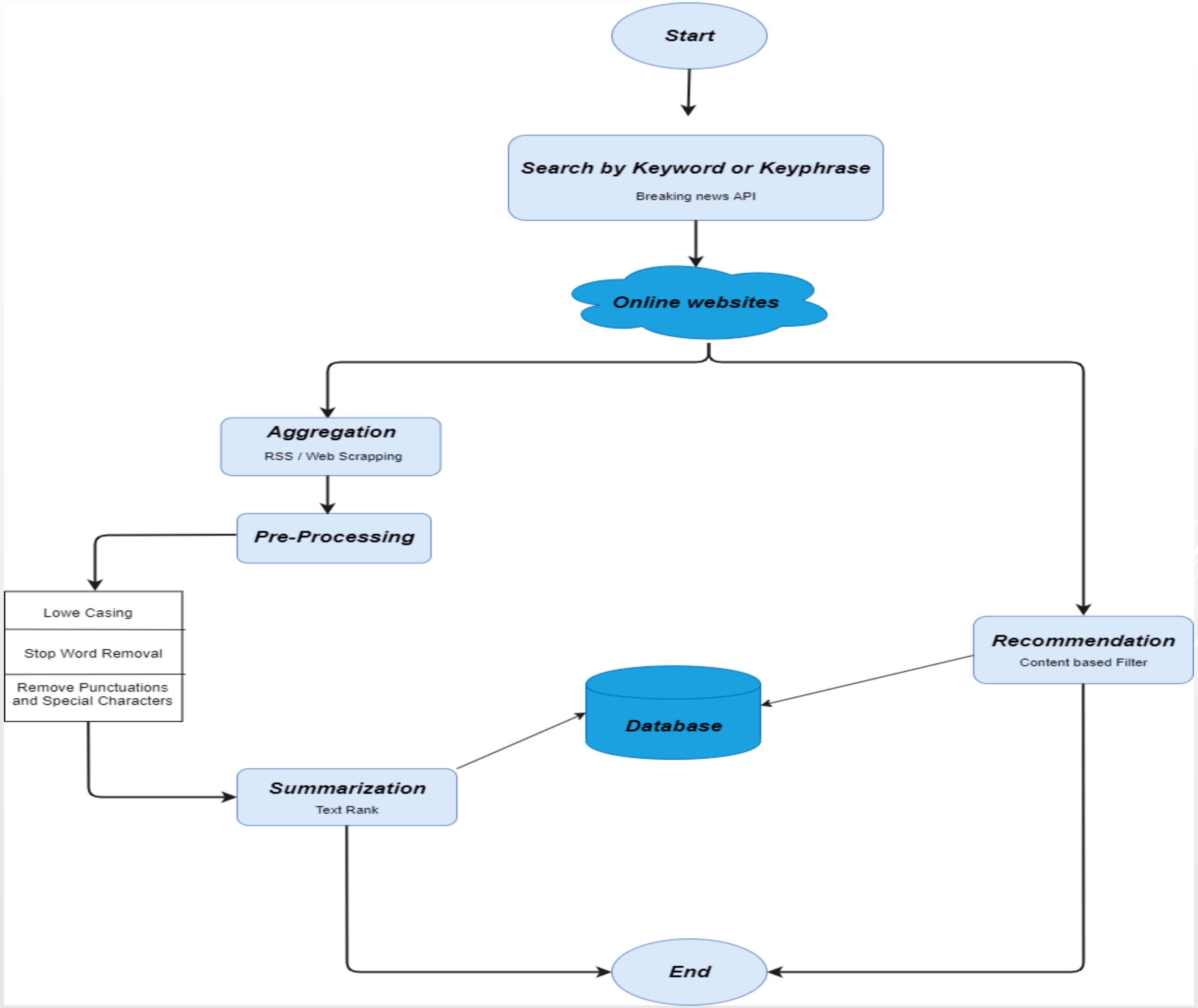
Sequence Diagram 2/2



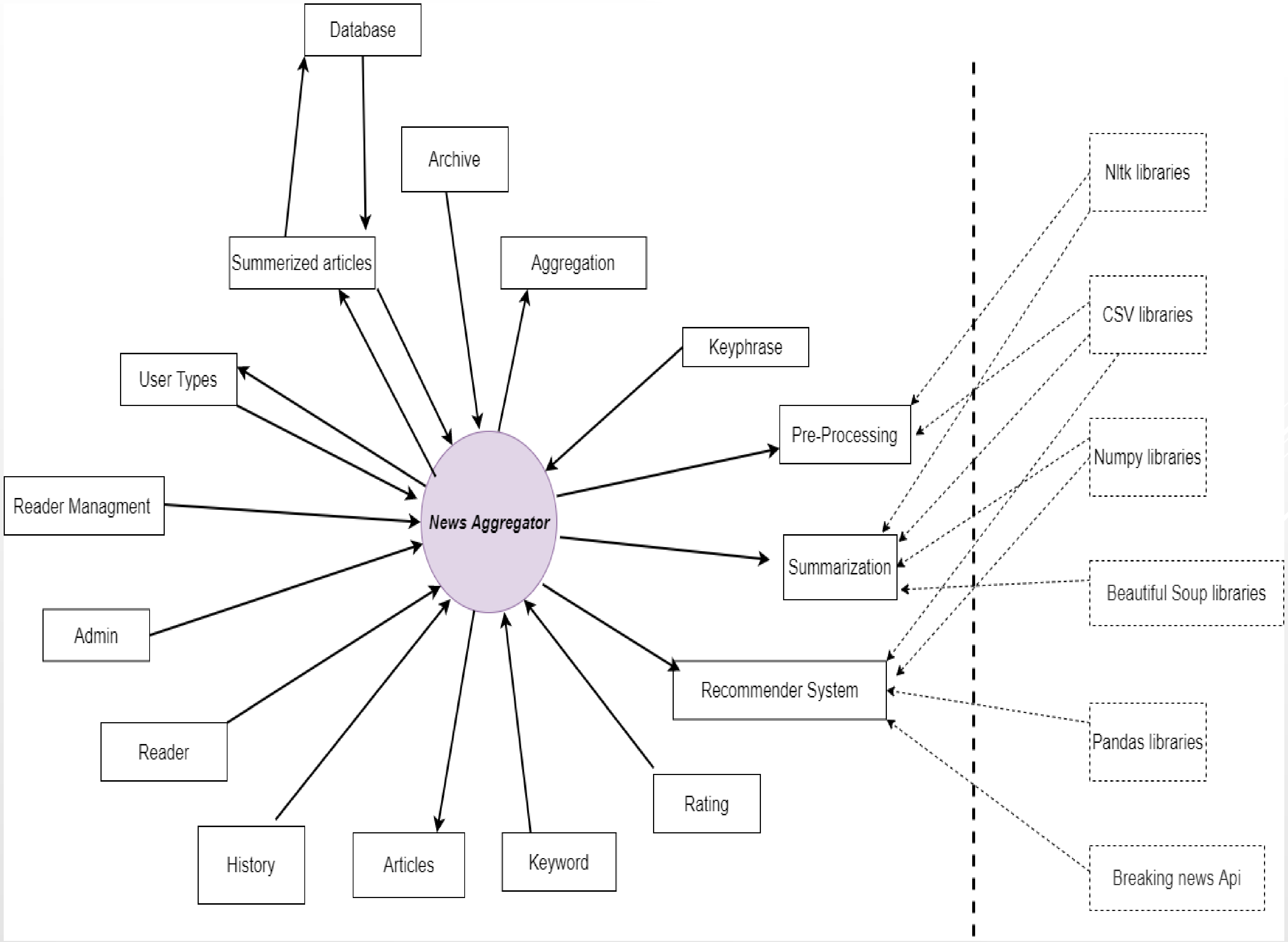
Block Diagram



Activity Diagram



Context Diagram


Database
Archive
Summerized articles
Aggregation
Keyphrase
User Types
Pre-Processing
Reader Managment
News Aggregator
Summarization
Admin
Recommender System
Reader
Rating
History
Articles
Keyword
Nltk libraries
CSV libraries
Numpy libraries
Beautiful Soup libraries
Pandas libraries
Breaking news Api