New Era University
College of Computer Studies
Department of Computer Science

Recommendation System
for Class Suspensions using Natural Language
Processing Techniques

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APPROVAL SHEET

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ABSTRACT

The recommendation system has been applied to many different social media platforms. The recommender system is a filtering system that seeks a user's preferences and produces relevant recommendations depending on the user's preference. The recommendation system is a trend on commercial sites in recent years because it gives powerful insights into businesses. This research aims to apply the recommendation system to class suspension occurrence. Researchers used a Natural Language Technique called Sentiment Analysis. Sentiment Analysis is used as a preference to perform recommendations. Twitter is one of the biggest social media platforms. Twitter is a gold mine of data. Unlike other social platforms, almost every tweet is completely public and extractable. Researchers also perform data visualization and use Twitter to mine data and perform sentiment analysis to provide relevant recommendations depending on various topics that may cause class suspensions.

Keywords: Recommendation, Data Mining, Natural Language Processing, Twitter, Tweets, Sentiment Analysis, Social Media

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CHAPTER 1

INTRODUCTION

Background of the study

These days, a lot of incidents, crimes, natural disasters, weather calamities, and accidents often happen all over the world, these could vary from as simple as heavy rainfall to as disastrous as thunderstorms, wildfires, and many other occurrences that could affect surroundings, the environment that may sometimes hinder people from working their day to day life and other times possibly affect people negatively in a long run, individuals such as students, workers, and others, often encounter incidents while either going to workplaces or coming home from work or from schools and sudden incidents, crimes, and other accidents that happen may cause disturbance or obstruction to their daily routine. Now for most people who already have work, they can find their way around or avoid areas affected by these occurrences, but how about the most likely students. The latter don't have many options or alternatives around it? Or maybe even totally don't have a single option or alternative.

Node-Red programming tool is a flow that helps to extract sentiment analysis or emotion of people in social media and the recommendation system. This is what the researchers of this study want to try to improve or to help those students to find out or be informed about the incident as soon as it happened or even inform them while the incidents are still happening for them to avoid getting caught up in the incidents and possibly even recommend them.

General and Specific Objectives of the Study

To develop, implement, and evaluate a recommendation system about class suspension using Natural Language Processing.

Specifically:

- To implement web scraping techniques for gathering tweet data regarding the class suspension.
- To develop an analyzer and recommendation system using the concepts of natural language processing.
- To evaluate the developed model using sentiment analysis.
- To provide recommendations for agencies involved, based on what occurrences may factor for class suspensions.

Significance of the Study

This study will allow government officials and agencies to have an additional basis in declaring suspensions of classes. The data visualization will provide more information that can better the judgment or decision-making of the government officials in suspending classes with more efficiency and effectiveness.

Also, this research study may be beneficial to the following:

- Students: students will know earlier if classes are or to be suspended.

- School Authorities: School authorities will provide an earlier notice for the students if classes are suspended.

- Parents/Guardians: Parents could be informed if they need to send their child/children to school.

- Government officials and agencies: Officials can view the data that is visualized by the system, and officials and agencies may then use these visualizations as an additional basis if an announcement of class suspension is needed before the data viewed by the government officials.

Scope and Limitations

This study aims to produce a recommendation for government agencies related to suspensions of classes with sentiment analysis from Twitter. The Sentiment analysis from Twitter is the basis on how the recommendation system will produce output depending on how the user responds. Every user has a unique perspective regarding the phenomena that lead to suspending classes like typhoons, fire accidents, earthquakes, and other calamities.

The Recommendation System can only cover the data from Twitter to perform sentiment analysis and not supporting geographical location. The sentiment analysis from the data that we cleaned and retrieved from Twitter is the only basis for the agencies to perform recommendations. It also describes what the system can do and cannot do. The main feature of the system is recommending insights or actions depending on the results of sentiment

analysis. However, Node-Red can extract tweets that are within seven days old only. It doesn't support tweets older than seven days; however, the main goal of the system is to produce various recommendations and visualize data to gain insights into class suspensions depending on the occurrence of a result of sentiment analysis.

CHAPTER 2

REVIEW OF RELATED LITERATURE

This section of the study discusses the related literature that supports the Recommendation System for Class Suspensions using Natural Language Processing Techniques. The purpose of this is to captive relevant and related articles that lead to enrichment of the researchers and reader's knowledge about the topic of the recommending suspension of classes using Natural Language Processing.

Recommendation System

A recommendation system is a subclass of data separating a system that tries to foresee the "rating" or "inclination" a client would provide for a thing. They are primarily used in commercial applications. The suggestion framework is a framework that prescribes what should be possible specifically to a particular event. (Go Hirakawa et al., 2019).
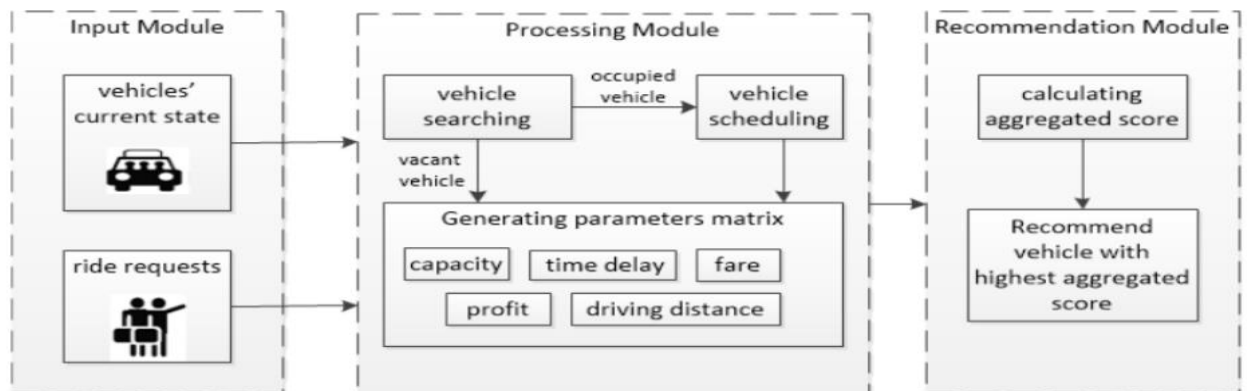

FIGURE 2. System architecture.

Figure 2.1 Recommender System in vehicle

A recommender framework for taxi drivers and workers searching for a ride, utilizing the information on travelers' verifiable courses and taxis' get and drop-off areas Advances in versatile and remote correspondence systems empower the down-to-earth utilization of proposal frameworks on the planet. A recommender framework is a data separating framework that will help individuals to pick the ideal data from a gigantic measure of information. Additionally, recommender frameworks require a gigantic measure of preparing information to give a progressively exact suggestion (Go Hirakawa et al., 2015).

In this time of the internet, countless pieces of information are put away over the Web. It is more diligently to get significant and exact data; subsequently, preparing data will make the recommender framework progressively proficient and give an increasingly precise outcome (Dr. Sarika Jain et al., 2015). Recommender frameworks are extremely valuable frameworks that can ensure precise, productive data to serve clients (Angira Amit Patel, Dr. Jyotindra N. Dharwa, 2016). A great deal of work has been put resources into growing new ways to deal with actualize recommender frameworks in mechanical and investigate fields uses which could assist recommender frameworks. A ton of intrigue is provoked due to the numerous useful uses of which could assist clients with managing issues picking brought about by data over-burden and give exact readings and suggestions (Chaudhari et al., 2017).

Guimares, Bressan (2016) presented the suggestion framework in cell phones. The sentences extricated from the online networking system are broken down in the main stage to pick the underlying extremity of the sentence. The

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client sentences extricate from the interpersonal organization through content into the SDK for PHP language and informal community application. The proposal arrangement of messages is sent to electronic gadgets. The substance of the message can be certain or nonpartisan; Shared Separating (Collaborative Filtering) is the way toward sifting and assessing things through the assessments of other individuals. One of its essential uses for clients of the versatile Web is Collaborative Filtering calculations and plan choices concerning rating frameworks and procurement of appraisals. Shared separating frameworks produce expectations or proposals for a given client and at least one thing. (While J. Ben Schafer 2007).

Recommender framework dependent on supposition examination objective is to help the Algerian clients in basic leadership with respect to items, eateries, motion pictures, and different needs. The principle steps of this investigation depend on distinguishing the assessment's extremity utilizing the semi-managed SVM to beat the absence of named information as the two spaces experience the ill effects of this shortcoming. The examination and trial assessment give fascinating discoveries of notion investigation into proposal methods dependent on CF. This study displayed an essential instrument that can be utilized to break down Algerian audits and remarks and recognize their extremity, to produce significant proposals for clients. (Sri Mankita 2017).
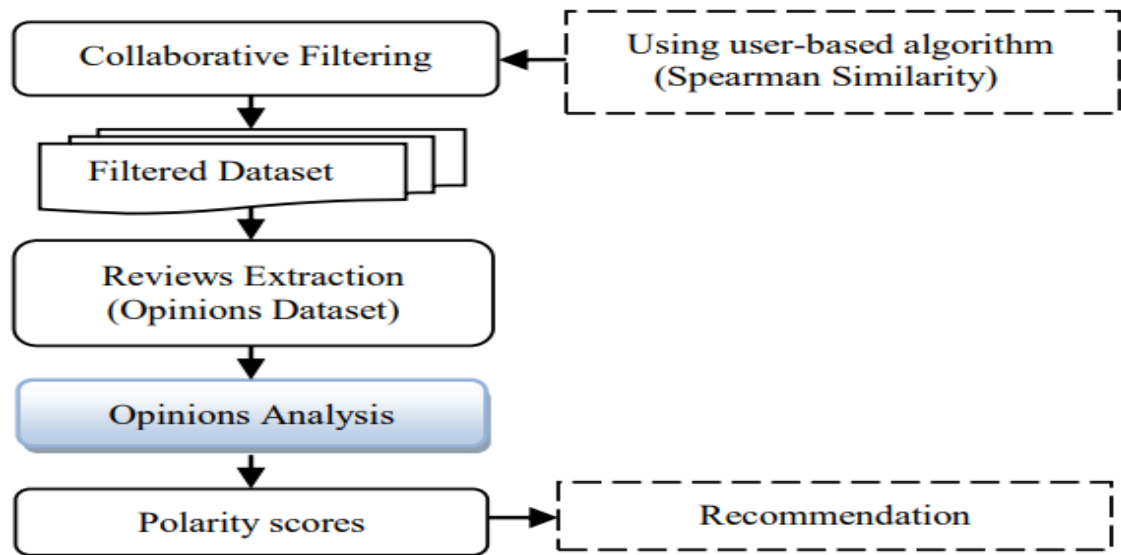
Figure 2.2 Spearman Similarity

Web Scraping

Web Scraping utilizes two brilliant libraries named Solicitation and Excellent Soup. The explanation for choosing these two libraries is that these are ground-breaking and adaptable libraries than different libraries that are accessible. Subsequently, will have the option to extricate an alternate sort of substance from the Web with the assistance of various HTML labels and store it into a book document or CSV record Sri Manikanta (2019).

Beautifulsoup or Wonderfulsoup is an amazing web scraping library that can be valuable when you need to assemble information from numerous sources. First, we spare data we scraped in .txt or .csv. to scrape a news story on the BBC, the researchers have to assess the substance and parse utilizing a delightful soup library and extricating and sparing it into the .txt or .csv document.

The yield will be utilized in the examination and looks into it. (Kaustumbh Jaiswal 2017).

Tweepy is a python library or Twitter Programming interface which is quick and progressively solid for scraping information on Twitter. Researchers need access to the qualifications to make Programming interface calls. These can be acquired from Twitter's engineer's support.

A procedure of getting little pieces of data accessible on the site. To improve and automate your interactions with your Twitter audience and the purpose of Tweepy is to enable Python to communicate with the Twitter platform and use its API or Application Programming Interfaces and the advantage of Tweepy is, it can be used to monitor tweets in real-time, to track events and when it happens (Amardeep Chauhan 2018).

Natural Language Processing

Natural language processing is the computer's method for handling human language so the computer can come back with the correct reaction and convert it into information that can be utilized for information handling and return results. Natural language processing lessens the limit between machine language and human language by joining writing inquiries into significant information and is utilized for distinguishing the semantic similarities with the informational index. It bunches similar words to the expressions of enthusiasm for semantical sense (Dr. Selvaraj 2017).

Twitter is utilized as a web-based life stage that interfaces other individuals' lives through imparting its insights, accomplishments, and recognition throughout everyday life. It has an alternate pack of information that originates from various perspectives of each client. The idea of slant study is to perform and decide the feeling, the response of each client to the particular posts; on the off chance that is doing slant examination, it is important to realize how Twitter fills in as an online life stage to each client. This examination deciphers individuals' sentiments from the themes. Conclusion study or sentiment mining is a significant system to speak to the assessment negative, positive or impartial, as a tweet is a trademark to express the client's emotions (Wagh, R. et al.,2018).

The Possibility of Notion Examination is to dissect enthusiastic sentiments and decide their frames of mind on the archive correspondence reaction. Understanding this can enable the specialists to choose what sort of presents or client commitment to gather (Anupama Kumar DS, et al 2018). The tweets were gathered utilizing the Gushing Programming Interface and three clusters of negative, positive, and impartial. The specialists utilized VADER, Valence Aware Dictionary for sentiment Reasoning is a model used for text sentiment analysis that is sensitive to both polarity and intensity of emotion. The client deliberately dependent on breaking down the tweets, Characteristic Language Handling was used to improve the tweets precisely. In this paper, the client's sentiments in three man-made brainpower partners by google (Vatrapu R et al 2016). Social Set Investigation for defining and conceptualizing huge information from online networking to direct an organized promoting effort. Huge

information examination from online life gives chances to achieving business bits of knowledge to accomplish effective showcasing efforts (Vatrapu, R et al. 2016). Internet-based life investigation is gathering explicit information from web-based life through social information examination device SODATO-gave by Facebook.

Social Data Analytics Tool (SODATO) was designed, developed, and evaluated to collect, store, analyze, and report big social data emanating from the social media engagement of any social media conversations about organizations. Datasets are free documents for every factor and joining all datasets to utilize them as entire information that can be separated and developed interest (Mukkamala R, et al 2016).

Notion figuring for news and occasions dependent via web-based networking media stages to process news information and discover the response from this information as feelings. Credulous Narrow's calculation recognizes the feeling of utilizing little message. Feelings are difficult to discover from huge information since clients utilize various content to decide the feeling (Shashare F, et al. 2017). Advanced Showcasing is another pattern for promoting efforts utilizing web-based life; it would help organizations publicize their items. Online life showcasing depends on the patterns, tweets, and drifting hashtags of a client. Likewise, it could help increment the number of offers utilizing advertising techniques through web-based life and to build up the business relationship through the network (Bhor H. N. et al 2018). The structure from examining enormous information from web-based life and displaying each client's open feeling utilizing a group classifier that consolidates space free, information-based

devices with Artificial Intelligence techniques. Artificial Intelligence is utilized to study the feelings and perceive the enthusiastic substance dependent on created utilizing information from internet-based life. The produced substance is changed into the graphical strategy to picture the feeling of each client from social information (Perikos, I et al 2018).

In this study, the distinctive kind of normal language handling strategies are utilized like assumption examination, assessment mining and feeling mining, and content mining to figure the declaration of the client's or individuals' notion as per news in the assigned region, monetary issues, wellbeing association occurrences, tranquilize episodes, training occurrences particularly information that contains sentiments, wants, thoughts or individual premiums and utilize this for differentiating the perspective on the setting for gauging the positive, negative and nonpartisan represent the better outcome.

Characteristic Language Handling systems when the last information has experienced information preparing and afterward discover an answer as per the issue. Online life like Twitter, inn audits and shopping surveys, or an electronic supposition investigation to look at and assemble comparing highlights by a lot of positive and negative outcomes in utilizing it to fabricate a huge amount of improving client control on the Web in assessing significant business choices, strategies, administrations. (Kherwa et al, 2014;) while other investigations utilize nostalgic examination for social affairs an extremely "enormous information" like distinguishing voice or reaction of a group for items, administrations. As a result of this, it tends to be effectively delegated great/terrible, liked/not liked, and from

these criticisms which are entirely significant for certain organization and this isn't only an input however a numerous language criticism and originates from various language dissecting materials and the arrangement.

Multilingual Notion Examination Grouping, by transforming on the web item audits into language classes and characterizing each literary dataset into two classes. Enormous Information Investigation methods, for example, Huge Information Preparing, utilizes content mining and feeling examination by acquiring the view or assessments of the client in the business (Marius Ngaboyamahina, , 2019)

Conceptual Framework

This section explains how the proposed system works with the use of diagrams as a representation.
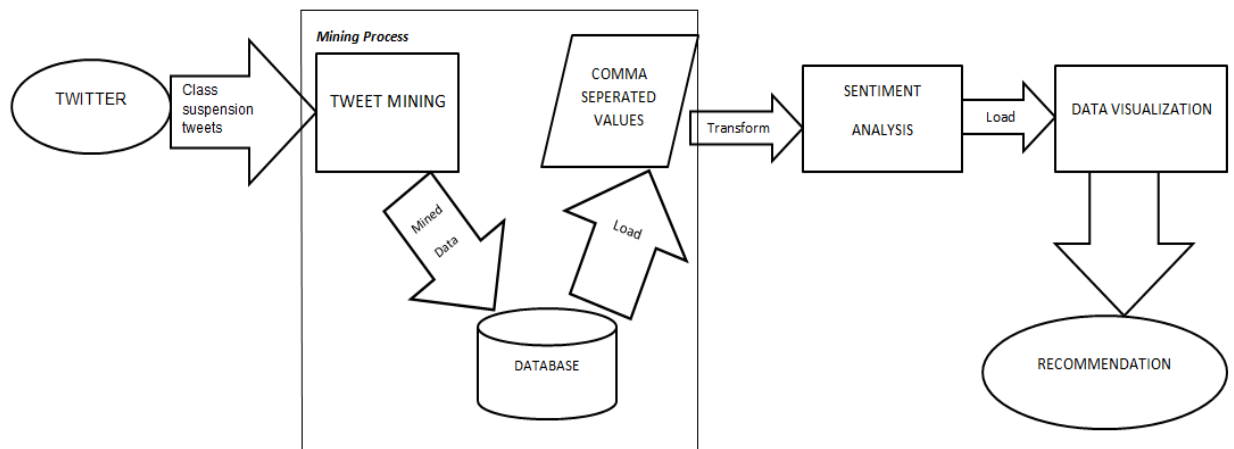
Figure 2.3 Conceptual Framework

This section represents the conceptual framework that explains operations and features in which the system would operate.

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The Conceptual Framework shows how the system will be generating recommendations. Initially, the researchers scrape relevant tweets regarding class suspensions using Twitter API, then store them in a database and load it into the python language, it will then visualize or plot the extracted data. Sentiment analysis is used as the basis of the recommender to make various recommendations and make relevant recommendations.

DEFINITION OF TERMS

Recommendation system: is a subclass of information filtering system that seeks to predict the "rating" or "preference" a user would give to an item. They are primarily used in commercial applications.

Sentiment Analysis: is the interpretation and classification of emotions (positive, negative, and neutral) within text data using text analysis techniques.

Natural Language Processing: is a subfield of linguistics, computer science, information engineering, and artificial intelligence concerned with the interactions between computers and human languages, in particular how to program computers to process and analyze large amounts of natural language data.

Tweepy: is a Python library for accessing the Twitter API. It is great for simple automation and creating Twitter bots.

Dataset: is a collection of data. In the case of tabular data, a data set corresponds to one or more database tables, where every column of a table

represents a particular variable, and each row corresponds to a given record of the data set in question.

Database: is an organized collection of data, generally stored and accessed electronically from a computer system. Where databases are more complex, they are often developed using formal design and modeling techniques.

Data Mining: is the process of finding anomalies, patterns, and correlations within large data sets to predict an outcome.

CHAPTER 3

METHODOLOGY

This section provides the methodology of the study. Describes how each phase function is related to each other. This section presents how the researchers constructed the system as a whole and discuss the different approaches to how the system works.

Project Design

The project design (Figure 3.1) of this study describes how the system works and how each Phase is constructed. The project design discusses how each Phase is related to each other. The system consists of four phases which are Data Retrieval Phase, Pre-Processing Phase, Post-Processing Phase, and Recommendation Phase. Data Retrieval Phase Post Processing Phases are required to get efficient recommendations. The output recommendation is based on the output of the first three phases.

Data Retrieval Phase. This Phase sets up the configurations that need to retrieve data from Twitter, which includes setting up the credentials from Twitter that is needed to use Twitter API. Twitter provides a developer portal to manage developers to get access to the self-serve tools and Twitter API. This is the first step to retrieve and acquire raw data from Twitter.
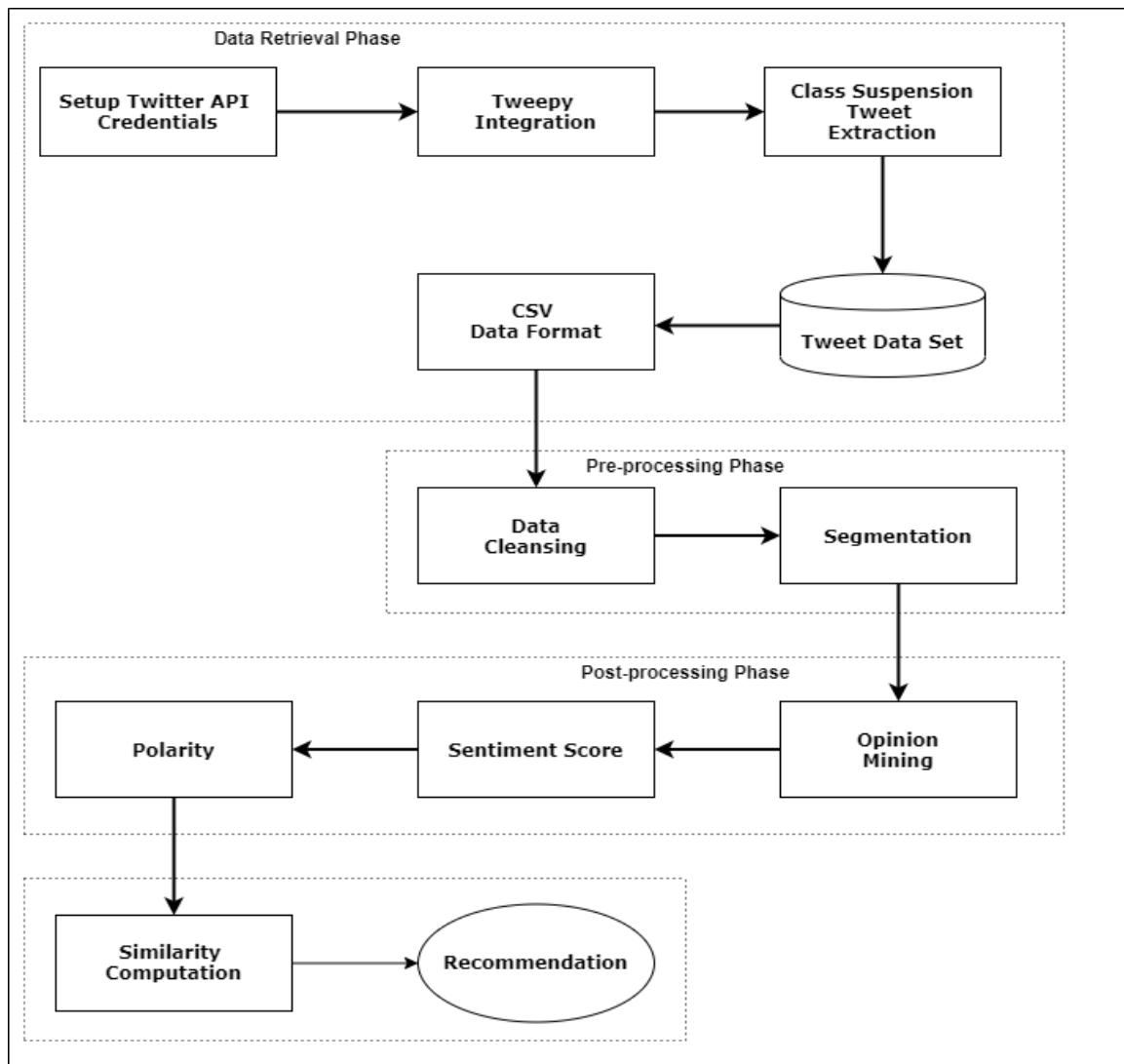
Fig 3.1 Project Design of the system

Pre-Processing Phase. This Phase is where the process of cleaning raw data from Twitter and performing normalization throughout the data—analyzing text or string into syntactic components and converting raw data into CSV format—describing each text or data to unique identification and removing ambiguity from each set of data to prepare into the sentiment analysis.

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Post-Processing Phase. This Phase is the process of identifying and performing opinion mining to the cleaned data and compute the if the tweets are negative, positive, neutral tweets that are extracted from Twitter and visualize the polarity score or sentiment analysis using Heat Map. This Phase is where the processing of the polarity computation will be performed and after will be used in the recommendation phase.

Recommendation Phase. This Phase is the process of recommending class suspensions to the agencies based on polarity scores that are computed in the Post Processing Phase. This Phase produces various recommendations based on occurrences that may result in possible suspensions.

Project Development

This section discusses the flow of the system and how every step of each Phase from the Data Retrieval Phase to the Recommendation phase will work with the use of diagrams to visualize the flow.
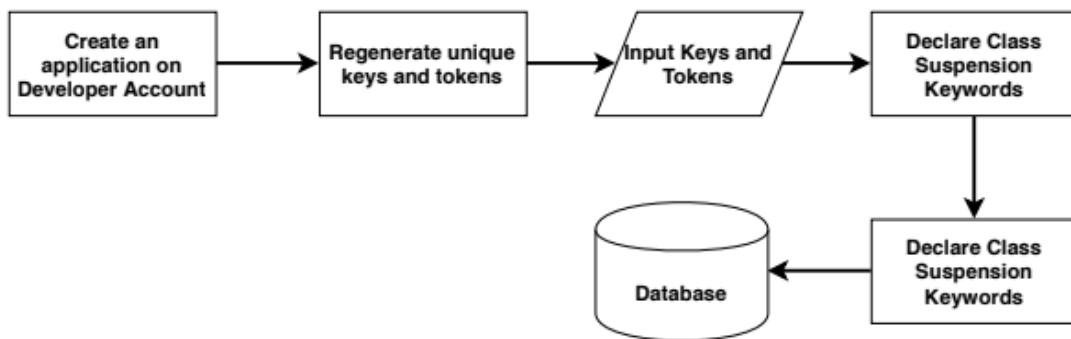
Fig 3.2 Data Retrieval Phase

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Data Retrieval Phase. This Phase starts with setting up the credentials then extracting and converting raw data to CSV format. Twitter has its developer portal for programmers, researchers, developers to access their APIs. The developers should register first into the Twitter developer portal to gain access to the website. Each of the developers and registered users of the Twitter developer portal has their own unique Access token and access token secret. The access token is a key generated by Twitter representing the developers use to gain access to the Twitter APIs.

Researchers use Tweepy as API to use in the system. Tweepy is a Python library for accessing Twitter API. Then after setting up the Twitter API Credentials, the researchers create a python code to call the function of Twitter API. The extraction in Tweets has the involvement of occurrences that may cause class suspension. All Twitter APIs that extracting tweets have automatic data encoded using JavaScript Object Notation (JSON). JSON is based on key value pairs with named attributes and associated values. All tweets extracted stored in a database.

Pre-Processing Phase. This Phase is cleaning raw data extracted from twitter and stored in the database then converted into CSV format. The two parts of the cleaning phase are removing duplicates and null values to the rows. Researchers use Node Red for removing the hashtags, ids, and dirty data that has no value to the rows.
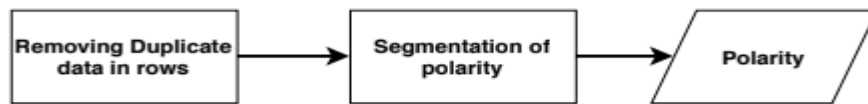
Figure 3.3 Pre-Processing Phase.

Post-Processing Phase. This Phase is to perform Sentiment Analysis on tweets and computes polarity scores of each tweet. Researchers used the TextBlob Python library to perform Sentiment Analysis. TextBlob is a Python library for processing textual data. Sentiment Analysis is a process of determining the emotion, the attitude of the tweets. Polarity is where to determine tweets whether it is positive or neutral and Subjectivity is to express personal feelings, views, or beliefs of a tweet.
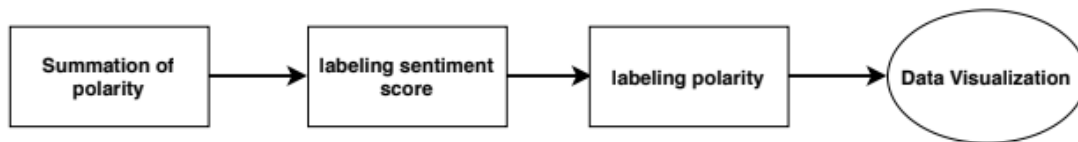
Figure 3.4 Post-Processing Phase

The computation of sentiment score is ranging from 1 to 5 and negative 1 to 5. Node Red is used by researchers to perform sentiment analysis on tweets. Node Red is flow programming that analyses every node to make functions.

Recommendation Phase. This Phase is to perform recommendations based on polarity scores that are computed. Once the polarity scores are obtained the polarity of every tweet gives an input to the recommendation.

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Researchers used Cosine Similarity to compute similar tweets based on category and whether the tweet is negative or positive. This helps the system to generate efficient recommendations for every four categories related in class suspensions.

Testing and Operating Procedures

This section discusses the testing and operating procedures that were implemented in this study.

Black Box Testing

Black-box Testing, also known as behavioral testing, mainly focuses only on the system's functionality as a whole without peering into its internal structures or workings. These tests are either non-functional and functional, though usually available.
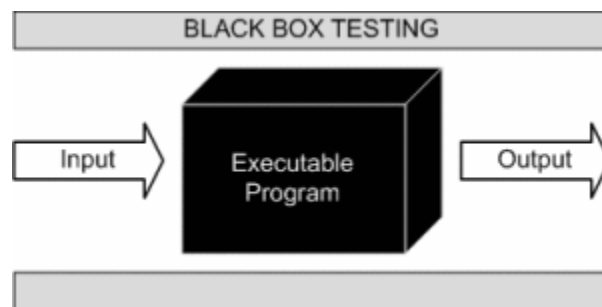
Fig 3.5 Black Box Testing

This software testing method, also known as behavioral testing, is a technique of testing a whole system without having any knowledge of the internal structure or workings of the system. Basically, the black box testing occurs only on the input and output of the system. The main focus of this method is the

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validation of system functional requirements. This testing method attempts to find errors in the following categories:

- Incorrect and missing functions

- Interface errors

- Errors in data structures or external database admission

- Behavior or performance errors

- Initialization and termination errors

Project Evaluation Techniques and Tools

This section describes the evaluation techniques that were applied by the researchers. To determine the computation of the Recommendation System through the output of Sentiment Analysis. Also, a cosine similarity metric is used to evaluate the result of sentiment and provide recommendations based on the computation.

Table 3.1 Sentiment and Value of Polarity

Sentiment	Value of Polarity
Positive	1 to 5
Negative	-1 to -5
Neutral	0

Precision. It is the fraction of relevant instances among the relevant instances and the percentage of total relevant results that are correctly classified by the used algorithm of this study. The computation of Precision shown in Equation 3.2, where *tp* is true positive and *fp* is false positive.

$$Precision = \frac{TP}{TP + FP}$$

(Equation 3.1)

Recall. It is defined as the measure of completeness or quantity. The ratio of correctly positive to all observations in the actual class. Basically, it tells out of how many times the data predicted correctly. The computation of Recall shown in Equation 3.3, where *tp* is true positive and *fp* is false positive

$$Recall = \frac{tp}{tp + fn}$$

(Equation 3.2)

F-measure. It is defined as a balance between Precision and Recall. The harmonic mean of the precision and Recall of the test. The computation is shown in Equation 3.4.

$$F1 = 2 \times \frac{Precision * Recall}{Precision + Recall}$$

(Equation 3.3)

The researchers describe how the project works on the technical side and what are its features. This part also includes the server side and tools used in this project. The Recommender System was developed by the researchers using Acer ES1-431-P1SH running on windows 10. What Recommender System does is it provides recommendations depending on an occurrence that may lead to or result to class suspensions. Sentiment Analysis has a big role in this system because the recommender system uses sentiment analysis to produce certain recommendations. Web scraping techniques for gathering of Class Suspension Data Set

This study presents the evaluation and statistical tools to visualize data and the overall results of the evaluation taken. This presents the procedures taken by the experiment of this study. The researchers used Python as the core programming language in this study, which includes different libraries to evaluate and visualize data. To create a recommendation, Researchers cleansed the data imported from MongoDB as comma separated values format (CSV), and removing null values, duplication of the data from rows.

CHAPTER 4

RESULT AND DISCUSSION

This chapter discusses the results and findings based on the experimentation of recommendation. This chapter also includes the structure of the table for every disaster including how data presented in web-based application.
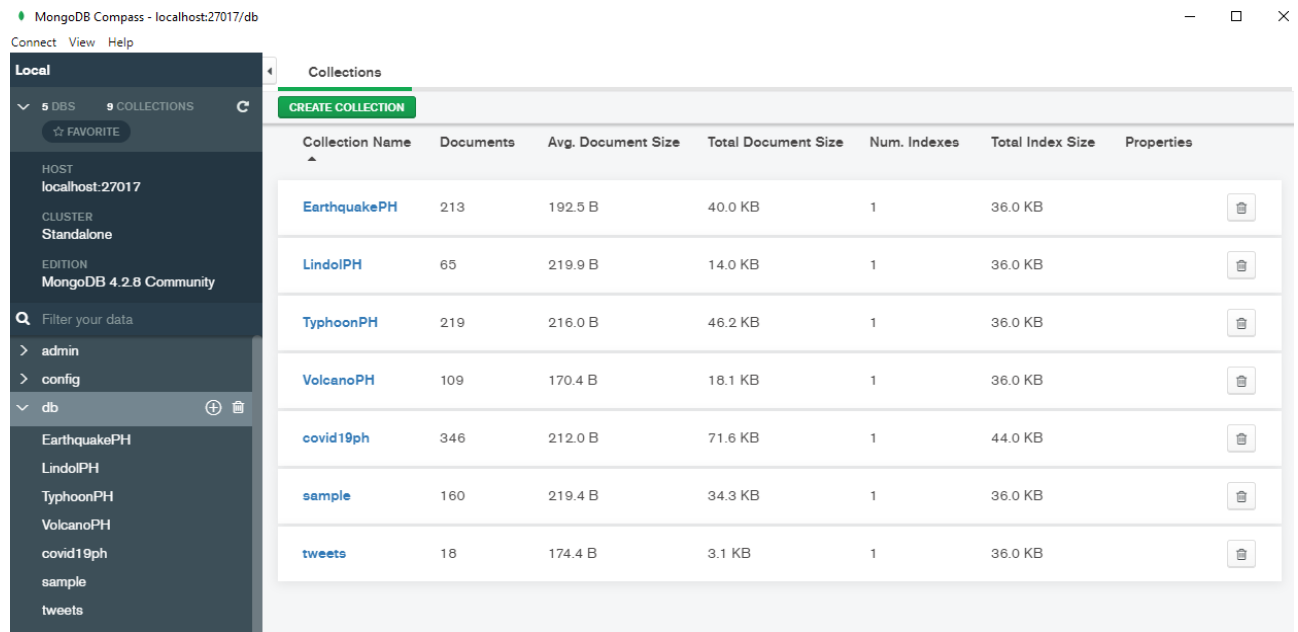
The Node-Red will extract tweets and the sentiments of the extracted tweets, and runs it on a webserver on port 1880 where it connects to Mongo database server where data from twitter loads. The Node-Red can run only in localhost using npm or JavaScript Node Module and the Recommender engine provides data analysis on how the system gives insights based on data visualization.
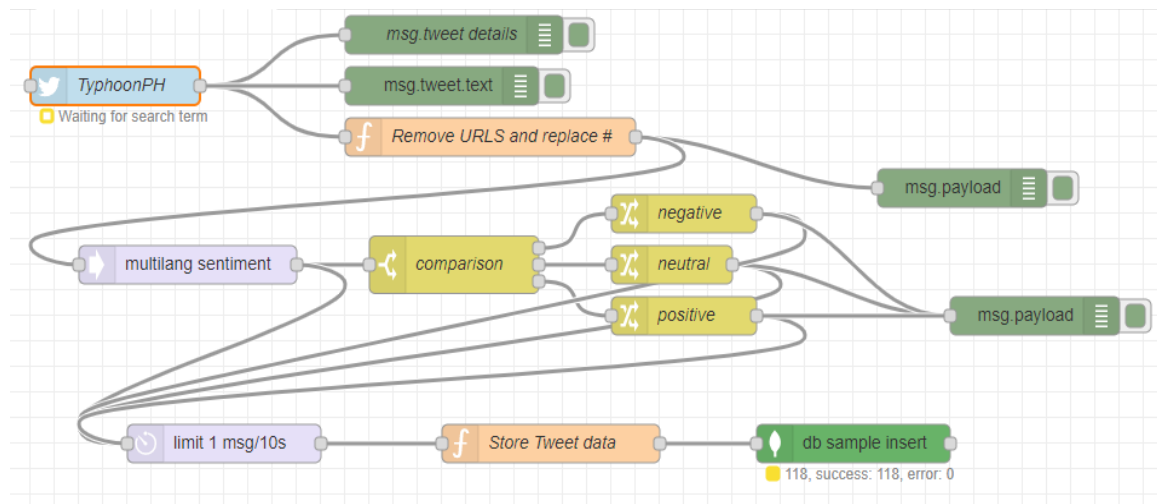
Figure 4.1 Node Red Extraction

The Node Red is flow-based programming built in JavaScript and runs in localhost using node package manager modules. In figure 4.1 Researchers created a flow that performs extraction on tweets and performs sentiment analysis. The extracted data loads into the Mongo database. Researchers input certain keywords and hashtags depending on the occurrence and trend in Twitter that may lead or result in class suspensions. Every node in the flow has its own functions and has different npm modules. The npm module is a package manager for Javascript and it has a runtime environment called Node JS. Every package has its own functions that the researchers imported into the flow. Researchers used the Twitter API node to connect flow into the Twitter API. Then Twitter API provides keys and tokens to gain access to their API.

Figure 4.2 Server Side of Recommender

In Figure 4.2, the server side of the recommender system is shown, which prints the extracted tweets from Node Red. The tweets' data that extracted is considered dirty because it consists of duplication of data and null values. The sentiment score is shown which is ranging from 1 to 5 or negative 1 to 5 and polarity is a string form of sentiment score. The id of each tweet consists of 10 bits of unique data.

Researchers used a GUI for MongoDB called Mongo DB compass. MongoDB Compass is a sophisticated GUI that allows to visualize and explore data with ad-hoc queries, it allows the researchers to analyze and understand the contents of data without using terminals and queries. Researchers convert collections from MongoDB to CSV format to be ready into the data cleansing in python language.

	_id	timestamp	tweet	sentiment_score	polarity
0	1	1.590000e+12	RT @Mirjam152: "Wij zijn de stem van de voorui...	0	NaN
1	2	1.590000e+12	RT @TrillanesSonny: Kapit lang. Aahon din muli...	0	neutral
2	3	1.590000e+12	RT @rugbyworldcup: Today is #CanadaDay cA\n\nR...	0	NaN
3	4	1.590000e+12	Makes you wonder, ano, why run if you can't so...	-2	Negative
4	5	1.590000e+12	Daarom duss. 🏆🐍	0	NaN

Removing duplicates and NaN

```
typhoon_df = typhoon_df.drop_duplicates(subset='tweet', keep="last")
typhoon_df.head()
```

	_id	timestamp	tweet	sentiment_score	polarity
1	2	1.590000e+12	RT @TrillanesSonny: Kapit lang. Aahon din muli...	0	neutral
3	4	1.590000e+12	Makes you wonder, ano, why run if you can't so...	-2	Negative
5	6	1.590000e+12	Daarom duss. 🏆🐍	0	neutral
9	10	1.590000e+12	RT @wierdduk: Echt alles in dit land moet gepo...	0	neutral
11	12	1.590000e+12	@VriendenV Ow ja! Dat heb je natuurlijk ook no...	0	neutral

Figure 4.3 Data Cleansing

In Figure 4.3, the researchers remove the duplicate row values and null data in the table. The table represents tweets about the typhoon and what people reacted to about it. It consists of unique values of id which helps to determine every unique tweet in the table and string value of tweets, sentiment score for values of polarity and lastly, the polarity is the string type of sentiment score.

Evaluation of the Sentiment Analysis Model

Polarity	Counts	Percentage
Positive	37	20.7
Negative	63	79.3
Total	100	100

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Table 4.1 Segmentation of Polarity

In Table 4.1, the researchers perform segmentation of polarity, since the polarity negative, positive, neutral is in one column, Researchers count the polarity and create a division between both of them. Researchers used pandas library to enable the function of value_counts() with the data type of integer.
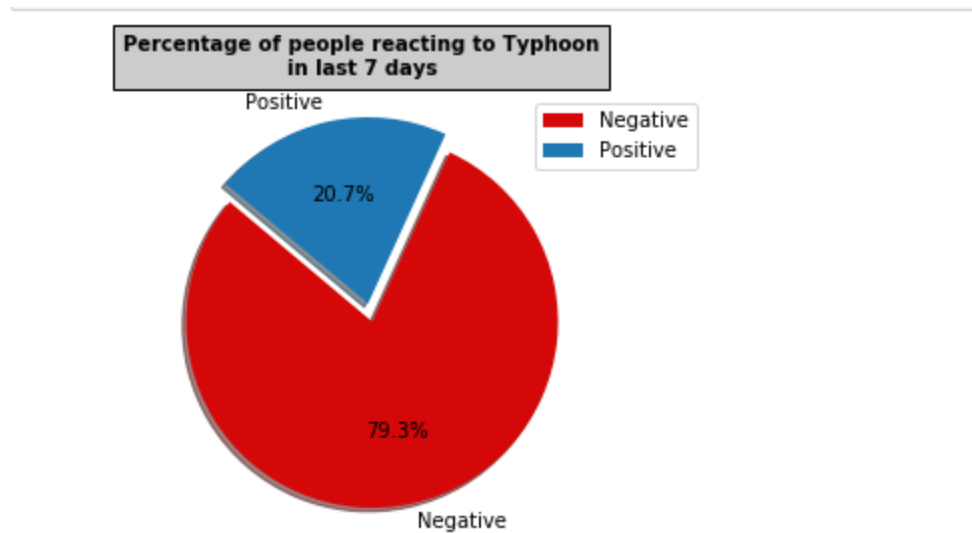
Figure 4.4 Data Visualization

In Figure 4.4, represents the pie chart of tweets. Researchers used matplotlib, a python library that main features are plotting data using any kind of charts depending on data. The results of the plot are the percentage of polarity and tweets regarding typhoons. Researchers label the pie chart as neutral positive and negative. It creates data insights on how people react on Twitter regarding typhoons. The main feature of plotting this data is to create insights.

Recommendation to School Administrators based from the Occurrences of Factors for Class Suspensions

Types of Disaster

Typhoon

Thread	signalno_1	signalno_2	signalno_3	signalno_4
MichaelDover Just got typhoon yesterday been wanting to play all day. I can't find any official forums.	Cancellation of Pre School Level	Recommending to Suspend Pre School level to Elementary level	work in all DepEd offices in the affected areas shall be automatically cancelled or suspended.	All travel and outdoor activities are cancelled with storm signal number 4. In the absence of typhoon signal warnings from PAGASA
Kaya apat na bagyo papasok ngayong july e	Cancellation or suspension of classes at the pre-school level in the affected area	Cancellation or suspension of classes at the pre-school, elementary, and secondary level in the affected area	Cancellation or suspension of classes at the pre-school, elementary, and secondary and tertiary levels, including graduate schools in the affected area	Local Government travel restrictions
RT kirstenbsalazar Ang daming paparating na bagyo and other natural disasters perodi pa rin tayo umuusad sa crisis natin against the covid	Classes in pre-school level in all public and private schools will be automatically suspended	Classes in pre-school, elementary and high school in all public and private schools will be automatically suspended with storm	Classes in all levels are automatically suspended with storm	All travel and outdoor activities are cancelled with storm
attyharryroque Sir good day! Can you help us with our problem regarding our calamity loan from SSS, ung calamity funds	public and private preschool and kindergarten classes in the affected areas shall be automatically cancelled or suspended.	public and private preschool, kindergarten, elementary and secondary classes in the affected areas shall be automatically cancelled or suspended.	work in all DepEd offices in the affected areas shall be automatically cancelled or suspended.	State of Calamity

Figure 4.5 Typhoon Dataframe

In Figure 4.5, represents the recommendation on the typhoon occurrence. It helps to create insights regarding class suspension based on typhoon signal number and data insights in the pie chart. Every signal number has its own warnings and recommendations on schools among primary, secondary, or tertiary.

30

Fire

	Thread	Trapped in a room	Caught in Smoke	Small Fire
	Bakit? Baka manlaban ang apoy? O baka biglang mamatay ang sunog kapag pinaputukan? Will this give a new meaning to 'in the line of fire'? This is an 'accident' waiting to happen. How is this acceptable?	Put a wet cloth under closed doors to help prevent the spread of smoke.	Hold your breath. Move quickly, covering head and hair. Keep head down and close eyes as often as possible.	Never enter a smoke-filled room, even if it looks free of fire.
	Blessing in disguise yan now they can build a new building (I hope) with fire sprinklers para if accidents happen hindi buong building sunog pati kapitbahay's house.	If you have a working phone, dial 911 or 540-231-6411 and report the name of your building or address, the room number, and the fact that you are trapped and need to be rescued. Stay on the phone until the fire department arrives at your room.	If clothing catches fire, stop where you are. Drop to the ground, and cover your mouth and face with your hands to protect them from the flames. Then roll over and over to smother the fire.	Alert people in the area.
	Okay so i have a conspiracy theory about how SJIT sunog happened. It wasnt an accident, but INTENTIONAL to killlll a person.	If you must escape through a window and there is no adjoining roof or fire escape, hang from the window by your hands and drop to the ground to shorten the height of the fall.	Assemble at the area designated in your departmental Emergency Action Plan, if applicable, and remain there until instructed by a public safety officer or the fire department that it is safe to re-enter the building.	Activate the fire alarm.

Figure 4.6 Fire Dataframe

In Figure 4.6, represents some countermeasures, preventive measures or first aids in depending on the situation, it gives people information or knowledge on what to do if they are caught in such situations to lessen the risk and damage to people's property or even preventing the people to be at risk of fire incidents.

Covid-19

Thread	Covid19 Preventive Measures	Covid19 Treatments
RT mikkogozalo Ayon sa reports na sinusumite ng labs sa DOH, 44,822 katao na ang nagpositibo noong June 27. Kanina, may 36,438 confirmed	Regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water. Why? Washing your hands with soap and water or using alcohol-based hand rub kills viruses that may be on your hands.	If you feel sick you should rest, drink plenty of fluid, and eat nutritious food. Stay in a separate room from other family members, and use a dedicated bathroom if possible. Clean and disinfect frequently touched surfaces.
Eto ba yun? 858 new cases? Halos, halos araw araw pataas ng pataas ang new cases.	Maintain at least 1 metre distance between yourself and others. Why? When someone coughs, sneezes, or speaks they spray small liquid droplets from their nose or mouth which may contain virus. If you are too close, you can breathe in the droplets, including the COVID-19 virus if the person has the disease.	If you have minor symptoms, such as a slight cough or a mild fever, there is generally no need to seek medical care. Stay at home, self-isolate and monitor your symptoms. Follow national guidance on self-isolation.
RT BUMteous Every single death in the Philippines caused by COVID is a death caused by the government.	Avoid going to crowded places. Why? Where people come together in crowds, you are more likely to come into close contact with someone that has COVID-19 and it is more difficult to maintain physical distance of 1 metre.	if you live in an area with malaria or dengue fever it is important that you do not ignore symptoms of fever. Seek medical help. When you attend the health facility wear a mask if possible, keep at least 1 metre distance from other people and do not touch surfaces with your hands.
HOLY CRAP!! Nagkadaghan!!! Abi nakog 500/day was bad. Clearly its getting worse.	Avoid touching eyes, nose and mouth. Why? Hands touch many surfaces and can pick up viruses. Once contaminated, hands can transfer the virus to your eyes, nose or mouth. From there, the virus can enter your body and infect you.	Seek immediate medical care if you have difficulty breathing or pain/pressure in the chest. If possible, call your health care provider in advance, so he/she can direct you to the right health facility.

Figure 4.7 Covid-19 Dataframe

In Figure 4.7, represents the preventive measures against the pandemic people could do to not be infected with the virus which can help to suppress the pandemic, and also the pandemic treatments or aid if one did get infected to have a higher chance of surviving the virus

Volcanic Eruption

Thread	During a Volcanic Eruption	After a Volcanic Eruption
Taal volcanic eruption might "produce an enhanced polar vortex— a large area of low pressure and cold air surrounding the Earth's North and South poles, which in turn would drive warming across the Eurasian continent"	Listen to a local station on a portable, battery-operated radio or television for updated emergency information and instructions. Local officials will give the most appropriate advice for your particular situation.	Let friends and family know you're safe.
Aigjht, i don't understand why those people are not preparing their selves to leave that damn place. they will all get suffocate, that shit also happed here in PH last january. our city is far, but the volcanic dust still reaches us, trust me it's so hard to breath that time	Follow any evacuation orders issued by authorities, and put your emergency plan into action. Although it may seem safe to stay at home and wait out an eruption, if you are in a hazard zone, doing so could be very dangerous.	Register yourself as safe on the Safe and Well website.
My boss was telling us that in some provinces, they don't have any access to the news aside from DZMM as other networks' signal cannot reach the area. The recent happenings in the country like the pandemic, the taal volcano's eruption, they only had updates from DZMM.	if indoors, close all window doors and dampers to keep volcanic ash from entering	If evacuated, return only when authorities say it is safe to do so.
That's where "never-say-die" attitude can bring you. So much to overcome nung second yr - got sick twice during the yr, Taal volcano eruption (fam had to evacuate for 2 weeks), pandemic, online classes, FAILED EXAMS (dami neto buong taon). But now im headed to yr 3!	Put all machinery inside a garage or barn to protect it from volcanic ash. If buildings are not available, cover machinery with large tarps.	Continue listening to local news or a NOAA Weather Radio for updated information and instructions.
Well, the year started with eruption of Taal volcano in philippines in Jan. I had the chance to climb this very unique volcano in 2019 & it's destruction was particularly shocking. \nPacific ring of fire is active anyway.	Bring animals and livestock into closed shelters to protect them from breathing volcanic ash.	If people around you are injured, practice CHECK, CALL, CARE. Check the scene to be sure it's safe for you to approach, call for help, and if you are trained, provide first aid to those in need until emergency responders can arrive.

Figure 4.8 Volcanic Eruption Dataframe

In Figure 4.8, represents the actions people could take during a volcano eruption to help them lessen of being at risk of ashfall and take the right measures, provide evacuation information to avoid being caught off guard of the volcanic eruption.

Earthquake

Thread	Indoor Earthquake Solutions	Outdoor Earthquake Solutions	Moving Vehicle Earthquake Solutions	Trap in Debris Earthquake Solutions
EarthquakePH I was practically numb and sleepy at that time so I didn't feel it. Zzzz...	Drop to the ground; take COVER by getting under sturdy table or piece of furniture and hold on until the shaking stops. Cover your face and head with your arms and crouch in an inside corner of the building.	Move away from the buildings, street lights and utility wires.	Stops as quickly as safety permits and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses and utility wires.	Do not light a match.
karenalcob Ang galing di ba? How the subsconscious still connects with the reality... BUT ako lang nakaramdam ng lindol	Stay away from glass, windows, outside doors and walls or anything could fall such as lightning fixtures or furniture	Once in the open, stay there until shaking stops. The greatest danger exist directly outside buildings at exits and alongside exterior walls.	Proceed cautiously once the earthquake has stopped. Avoid roads, bridges or ramps that might have been damage by the earthquake.	Do not move around or kick up dust.
aleleeeeng saw #EarthquakePH and I was like pota lumindol?	Stay inside until the shaking stops and it is safe to go outside. Do not exit a building during the shaking.	get into the open, away from buildings, power lines and trees. Be alert for falling rock and other debris that could be loosened by the earthquake.\n	Avoid bridges, overpasses, underpasses, buildings or anything that could collapse.	Cover your mouth with a handkerchief or clothing.

Figure 4.9 Earthquake Dataframe

In Figure 4.9, represents the right preventive measures, solutions people should do in case there is an earthquake, may it be people are inside or outside their house or even while in a vehicle when the earthquake occurs, even in the worst case scenario like being trapped in debris there are measures that could be taken to lessen the risk while waiting for respondents.
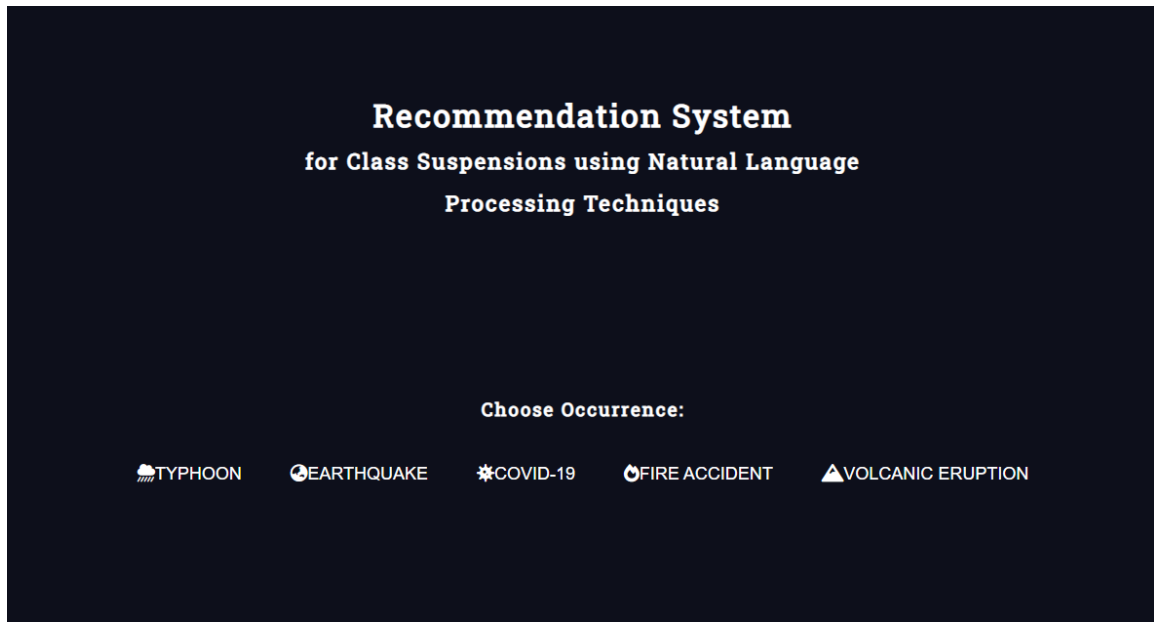
Figure 4.10 User Interface

In Figure 4.10, represents the web-based user interface of the recommendation system. The researchers used the Flask python framework to be able to run the Recommendation System on the Web. Researchers create a function for every occurrence that renders the template of HTML file and dataframe to connect the python dataframe to the user interface. Researchers create HTML files that are used for creating a user interface and declaring the routes of every occurrence in flask application.

```
@app.route('/')
def index():
    return render_template('index.html')
@app.route('/typhoon/')
def typhoon():
    typhoon_df                                                =
pd.read_csv('C:\\Users\\db2admin\\Desktop\\Recommender\\Disasters\\TyphoonSigna
lNo.csv', encoding='cp1252')
    return
    render_template('typhoon.html',tables=[typhoon_df.to_html(header="true",
index=False)])
```

CHAPTER 5

SUMMARY, CONCLUSION, AND RECOMMENDATION

This chapter presents a summary of the study, conclusion, and recommendation based on the results of the project.

SUMMARY

In this study, the researchers used the Recommendation system based on sentiment analysis or how people react on social media. Nowadays, many companies use web platforms like Netflix, YouTube, and Facebook. The developed system with tweet extraction, with the use of sentiment analysis to provide insights on how people on Twitter react regarding topics or occurrences that may lead or cause class suspension.

The researchers created a project design to further explain their idea of the system. The developed system can perform sentiment analysis in different languages with the help of node modules. Researchers have stated the benefits of the study and explain the project design. The first Phase is data extraction from Twitter where it stores and loads it on the Mongo database. The second Phase is pre-processing which removes the duplicates and null values of extracted data. The third Phase is performing sentiment analysis on tweets and the last Phase is a recommendation system based on the results of sentiment analysis.

Conclusion

This research paper shows how to recommend class suspension based on the results of polarity with data extraction and sentiment analysis.

Starting from the objectives of the study, to extract raw data from Twitter and store it into the database. The results of experiments showed that sentiment analysis can be a basis for the recommendation system. The results provide a recommendation that may factor class suspension. However, it is not fully developed and would be greatly improved in further research.

Recommendation

The recommendation system requires a large amount of data to provide the most certain recommendation. Adding more data helps the recommendation system to perform more accurately and precise on recommending data. These are the following suggestions to improve the limitation of this project:

- **Implement machine learning:** Machine learning helps a lot in improving the accuracy and precision of recommendation.
- **Coverage of the system:** Applying a recommendation system to production, marketing, accounting, or using collaborative filtering to predict the interests of the user.
- **Adding more Datasets:** Adding more datasets helps to improve the accuracy and precision of the system.

Bibliography

[1] Go Hirakawa et al *(2019) "Willingness to Share Emotion Information on Social Media: Influence of Personality and Social Context"*

[2] Dr. Sarika Jain et al, (*2015). Fine-grained sentiment analysis of social media with emotion sensing. Future Technologies Conference (FTC).*

[3] Angira Amit Patel, Dr. Jyotindra N. Dharwa, (2016)*Methodologies for using Social Media Collaborative Work systems.*

[4] Chaudhari et al, (2017*). An Aspect of Sentiment Analysis: Sentimental Noun with Dual Sentimental Words Analysis.*

[5] Guimares, Bressan (2016) *Collective intelligence & sentimental analysis of twitter data by using StandfordNLP libraries with software as a service (SaaS).*

[6] While J. Ben Schafer (2017)*Using sentimental analysis in prediction of stock market investment.*

[7] Sri Manikanta (2019)*Content-Based Recommendation Systems. The Adaptive Web. Lecture Notes in Computer Science, vol 4321. Springer, Berlin, Heidelberg.*

[8] Kaustumbh Jaiswal (2017)*Applying data mining techniques in the job recommender system for considering candidate job preferences. International Conference on Advances in Computing, Communications and Informatics (ICACCI).*

[9] Amardeep Chauhan (2018) *Segment-based Approach To Clustering Datamining.*

[10] Dr. Selvaraj (2017). *A Guide to Parsing: Algorithms and Terminology*

[11] Wagh, R(2018*). Entity Retrieval. Netherlands Organisation for Scientific Research (NWO).*

[12] Anupama Kumar DS (2018)*. Dataset for a Natural Language Interface for Databases.*

[13] Vatrapu, R (2016)*Job Recommendation Systems for Enhancing E-recruitment Process.*

[14] Mukkamala R, et al (2016)*A Personalized Company Recommender System for Job Seekers.*

[15] Shashare F, et al (2017) *A Content-Based Recommendation Approach. Ecole Nationale Suprieure d'Informatique, 16309 El Harrach, Algiers, Algeria.*

[16] Bhor H. N., et al (2018)*Topic segmentation algorithms for text summarization and passages retrieval. National Conference on Artificial Intelligence*

[17] Perikos, I et al (2018*) Information-based devices with Artificial Intelligence techniques*

[18] Kherwa et al, (2015) *Characteristic Language Handling systems*

[19] Marius Ngaboyamahina et al, (2019) *Multilingual Notion Examination*

APPENDIX A

Proposal

Proposal

A. Basic Information

Thesis Title: Recommendation System for Class Suspension using Natural Language Processing Techniques

Topic: Social Media, Natural Language Processing, Sentiment Analysis, Data Visualization

Researchers: Velasco Zyron ,   Ramos Gian Adrian,   Lamson Jann Daryle V.

B. Technical Description

Background of the Study:

These days, a lot of incidents, crimes, natural disasters, weather calamities, and accidents often happen all over the world, these could vary from as simple as heavy rainfall to as disastrous as thunderstorms, wildfires, and many other occurrences that could affect surroundings, the environment that may sometimes hinder people from working their day to day life and other times possibly affect people negatively in a long run, individuals such as students, workers, and others, often encounter incidents while either going to workplaces or coming home from work or from schools and sudden incidents, crimes, and other accidents that happen may cause disturbance or obstruction to their daily routine. Now for most people who already have work, they can find their way around or avoid areas affected by these occurrences, but how about the most likely students. The latter don't have many options or alternatives around it? Or maybe even totally don't have a single option or alternative.

Node-Red programming tool is a flow that helps to extract sentiment analysis or emotion of people in social media and the recommendation system. This is what the researchers of this study want to try to improve or to help those students to find out or be informed about the incident as soon as it happened or even inform them while the incidents are still happening for them to avoid getting caught up in the incidents and possibly even recommend them.

General and Specific Objectives:

To develop, implement, and evaluate a recommendation system about class suspension using Natural Language Processing.

Specifically:

- To implement web scraping techniques for gathering tweet data regarding the class suspension.
- To develop an analyzer and recommendation system using the concepts of natural language processing.
- To evaluate the developed model using sentiment analysis.
- To provide recommendations for agencies involved, based on what occurrences may factor for class suspensions.

Research Story:

- According to Go Hirakawa (2019) A recommendation system is a subclass of data separating a system that tries to foresee the "rating" or "inclination" a client would provide for a thing. They are primarily used in commercial applications. The suggestion framework is a framework that prescribes what should be possible specifically to a particular event.

- According Dr. Sarika Jain (2015). In this time of the internet, countless pieces of information are put away over the Web. It is more diligently to get significant and exact data; subsequently, preparing data will make the recommender framework progressively proficient and give an increasingly precise outcome

- According to Angira Amit Patel, Dr. Jyotindra N. Dharwa, (2016).A great deal of work has been put resources into growing new ways to deal with actualize recommender frameworks in mechanical and investigate fields uses which could assist recommender frameworks..

- According to Chaudhari (2017). A great deal of work has been put resources into growing new ways to deal with actualize recommender frameworks in mechanical and investigate fields uses which could assist recommender frameworks. A ton of intrigue is provoked due to the numerous useful uses of which could assist clients with managing issues picking brought about by data over-burden and give exact readings and suggestions

- According to Guimares, Bressan (2016) the suggestion framework in cell phones. The sentences extricated from the online networking system are broken down in the main stage to pick the underlying extremity of the sentence. The client sentences extricate from the interpersonal organization through content into the SDK for PHP language and informal community application. The proposal arrangement of messages is sent to electronic gadgets..

- According to While J. Ben Schafer (2007)., One of its essential uses for clients of the versatile Web is Collaborative Filtering calculations and plan choices concerning rating frameworks and procurement of appraisals. Shared separating frameworks produce expectations or proposals for a given client and at least one thing

- According to Sri Mankita (2017).Recommender framework dependent on supposition examination objective is to help the Algerian clients in basic leadership with respect to items, eateries, motion pictures, and different needs. The principle steps of this investigation depend on distinguishing the assessment's extremity utilizing the semi-managed SVM to beat the absence of named information as the two spaces experience the ill effects of this shortcoming value of "big data."

- According to Kaustumbh Jaiswal (2017)   Beautifulsoup or Wonderfulsoup is an amazing web scraping library that can be valuable when you need to assemble information from numerous sources. First, we spare data we scraped in .txt or .csv. to scrape a news story on the BBC, the researchers have to assess the substance and parse utilizing a delightful soup library and extricating and sparing it into the .txt or .csv document. The yield will be utilized in the examination and looks into it

- According to Amardeep Chauhan (2018)   A procedure of getting little pieces of data accessible on the site. To improve and automate your interactions with your Twitter audience and the purpose of Tweepy is to enable Python to communicate with the Twitter platform and use its API or Application Programming Interfaces and the advantage of Tweepy is, it can be used to monitor tweets in real-time, to track events and when it happens

- According to Dr. Selvaraj (2017) Natural language processing is the computer's method for handling human language so the computer can come back with the correct reaction and convert it into information that can be utilized for information handling and return results. Natural language processing lessens the limit between machine language and human language by joining writing inquiries into significant information and is utilized for distinguishing the semantic similarities with the informational index

- According to Wagh, R.(2018). Twitter is utilized as a web-based life stage that interfaces other individuals' lives through imparting its insights, accomplishments, and recognition throughout everyday life. It has an alternate pack of information that originates from various perspectives of each client. The idea of slant study is to perform and decide the feeling, the response of each client to the particular posts; on the off chance that is doing slant examination, it is important to realize how Twitter fills in as an online life stage to each client.

   According to Vatrapu R (2016) The tweets were gathered utilizing the Gushing Programming Interface and three clusters of negative, positive, and impartial. The specialists utilized VADER, Valence Aware Dictionary for sentiment Reasoning is a model used for text sentiment analysis that is sensitive to both polarity and intensity of emotion. The client deliberately dependent on breaking down the tweets, Characteristic Language Handling was used to improve the tweets precisely. In this paper, the client's sentiments in three man-made brainpower partners by google

- According to Mukkamala R, (2016) Social Data Analytics Tool (SODATO) was designed, developed, and evaluated to collect, store, analyze, and report big social data emanating from the social media engagement of any social

media conversations about organizations. Datasets are free documents for every factor and joining all datasets to utilize them as entire information that can be separated and developed interest

- According to Shashare F, (2017) Notion figuring for news and occasions dependent via web-based networking media stages to process news information and discover the response from this information as feelings. Credulous Narrow's calculation recognizes the feeling of utilizing little message. Feelings are difficult to discover from huge information since clients utilize various content to decide the feeling.

- According to Bhor H. N (2018) Advanced Showcasing is another pattern for promoting efforts utilizing web-based life; it would help organizations publicize their items. Online life showcasing depends on the patterns, tweets, and drifting hashtags of a client. Likewise, it could help increment the number of offers utilizing advertising techniques through web-based life and to build up the business relationship through the network

How do you intend to solve the problem:

This study aims to produce a recommendation for government agencies related to suspensions of classes with sentiment analysis from Twitter. The Sentiment analysis from Twitter is the basis on how the recommendation system will produce output depending on how the user responds. Every user has a unique perspective regarding the phenomena that lead to suspending classes like typhoons, fire accidents, earthquakes, and other calamities.

Target users / Beneficiaries:
- Students: students will know earlier if classes are or to be suspended.
- School Authorities: School authorities will provide an earlier notice for the students if classes are suspended.
- Parents/Guardians: Parents could be informed if they need to send their child/children to school.
- Government officials and agencies: Officials can view the data that is visualized by the system, and officials and agencies may then use these visualizations as an additional basis if an announcement of class suspension is needed before the data viewed by the government officials.

Significance of Study:

This study will allow government officials and agencies to have an additional basis in declaring suspensions of classes. The data visualization will provide more information that can better the judgment or decision-making of the government officials in suspending classes with more efficiency and effectiveness.

Conceptual Framework
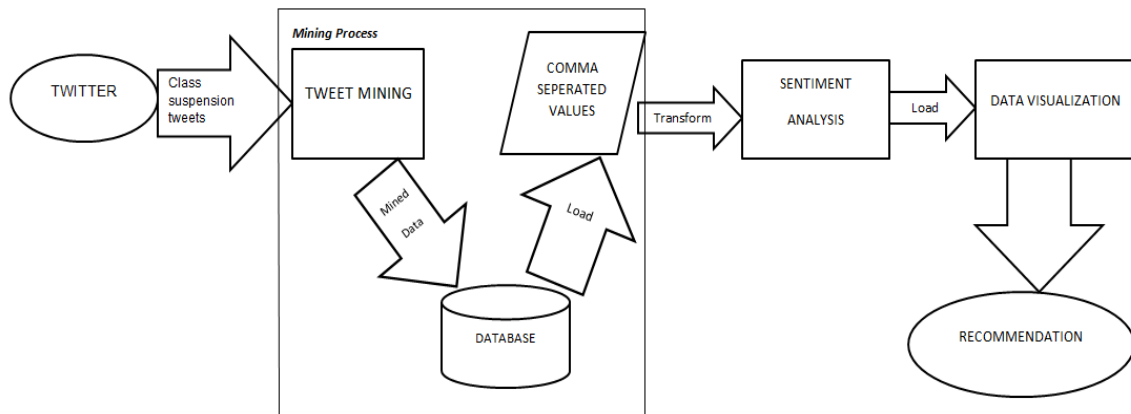
The Conceptual Framework shows how the system will be generating recommendations. Initially, the researchers scrape relevant tweets regarding class suspensions using Twitter API, then store them in a database and load it into the python language, it will then visualize or plot the extracted data. Sentiment analysis is used as the basis of the recommender to make various recommendations and make relevant recommendations.

REFERENCES:

[1] Go Hirakawa et al *(2019) "Willingness to Share Emotion Information on Social Media: Influence of Personality and Social Context"*

[2] Dr. Sarika Jain et al, (*2015). Fine-grained sentiment analysis of social media with emotion sensing. Future Technologies Conference (FTC).*

[3] Angira Amit Patel, Dr. Jyotindra N. Dharwa, (2016)*Methodologies for using Social Media Collaborative Work systems.*

[4] Chaudhari et al, (2017*). An Aspect of Sentiment Analysis: Sentimental Noun with Dual Sentimental Words Analysis.*

[5] Guimares, Bressan (2016) *Collective intelligence & sentimental analysis of twitter data by using StandfordNLP libraries with software as a service (SaaS).*

[6] While J. Ben Schafer (2017)*Using sentimental analysis in prediction of stock market investment.*

[7] Sri Manikanta (2019)*Content-Based Recommendation Systems. The Adaptive Web. Lecture Notes in Computer Science, vol 4321. Springer, Berlin, Heidelberg.*

[8] Kaustumbh Jaiswal (2017)*Applying data mining techniques in the job recommender system for considering candidate job preferences. International Conference on Advances in Computing, Communications and Informatics (ICACCI).*

[9] Amardeep Chauhan (2018) *Segment-based Approach To Clustering Datamining.*

[10] Dr. Selvaraj (2017). *A Guide to Parsing: Algorithms and Terminology*

[11] Wagh, R(2018*). Entity Retrieval. Netherlands Organisation for Scientific Research (NWO).*

[12] Anupama Kumar DS (2018)*. Dataset for a Natural Language Interface for Databases.*

[13] Vatrapu, R (2016)*Job Recommendation Systems for Enhancing E-recruitment Process.*

[14] Mukkamala R, et al (2016)*A Personalized Company Recommender System for Job Seekers.*

[15] Shashare F, et al (2017) *A Content-Based Recommendation Approach. Ecole Nationale Suprieure d'Informatique, 16309 El Harrach, Algiers, Algeria.*

[16] Bhor H. N., et al (2018)*Topic segmentation algorithms for text summarization and passages retrieval. National Conference on Artificial Intelligence*

APPENDIX B

Source Code

RRoute.py

```python
from flask import Flask, render_template
# from flaskwebgui import FlaskUI #get the
FlaskUI class
import pandas as pd
app = Flask(__name__)
# ui = FlaskUI(app)
@app.route('/')
def index():
    return render_template('index.html')
@app.route('/typhoon/')
def typhoon():
    typhoon_df =
pd.read_csv('/home/Daryle12/mysite/Disas
ters/TyphoonSignalNo.csv',
encoding='cp1252')
    return render_template('typhoon.html',
tables=[typhoon_df.to_html(header="true",
index=False)])
@app.route('/earthquake/')
def earthquake():
    earthquake_df =
pd.read_csv('/home/Daryle12/mysite/Disas
ters/EarthQuakeReco.csv',
encoding='cp1252')
    return
render_template('earthquake.html',
tables=[earthquake_df.to_html(header="tr
ue", index=False)])
@app.route('/covid/')
def covid():
    covid_df =
pd.read_csv('/home/Daryle12/mysite/Disas
ters/CovidReco.csv', encoding='cp1252')
    return render_template('covid.html',
tables=[covid_df.to_html(header="true",
index=False)])
@app.route('/fire/')
def fire():
    fire_df =
pd.read_csv('/home/Daryle12/mysite/Disas
ters/FireReco.csv', encoding='cp1252')
    return render_template('fire.html',
tables=[fire_df.to_html(header="true",
index=False)])
@app.route('/eruption/')
def eruption():
    eruption_df =
pd.read_csv('/home/Daryle12/mysite/Disas
ters/VolcanicEruptionReco.csv',
encoding='cp1252')
    return render_template('eruption.html',
tables=[eruption_df.to_html(header="true"
, index=False)])
    #    return
eruption_df.to_html(classes=["table-
bordered", "table-striped", "table-hover"])
if __name__ == '__main__':
    app.run()
```

COVID.html

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Covid-19</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static',
filename='style2.css')}}">
</head>
<body>
    <ul>
    <li class="typhoon"><a
href="/typhoon/">Typhoon</a></li>
    <li class="earthquake"><a
href="/earthquake/">Earthquake</a></li>
    <li class="fire"><a href="/fire/">Fire
Accident</a></li>
```

```html
    <li class="eruption"><a
href="/eruption/">Volcanic
Eruption</a></li>
    </ul>
<h2>Covid-19 tweets in last 7 days</h2>
{% for table in tables %}
      {{ table|safe }}
{% endfor %}
<script>

document.addEventListener('DOMContentLoaded', function() {
  var url = 'http://127.0.0.1:5001/GUI-is-still-open';
  fetch(url, { mode: 'no-cors'});
  setInterval(function(){ fetch(url, { mode: 'no-cors'});}, 5000)();
});
</script>
</body>
</html>
```

Earthquake.html

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Earthquake</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static',
filename='style2.css')}}">
</head>
<body>
  <ul>
    <li class="typhoon"><a
href="/typhoon/">Typhoon</a></li>
    <li class="fire"><a href="/fire/">Fire
Accident</a></li>
    <li class="eruption"><a
href="/eruption/">Volcanic
Eruption</a></li>
```

```html
    <li class="covid"><a
href="/covid/">Covid-19</a></li>
    </ul>
<h2>Earthquake tweets in last 7 days</h2>
{% for table in tables %}
      {{ table|safe }}
{% endfor %}
<script>

document.addEventListener('DOMContentLoaded', function() {
  var url = 'http://127.0.0.1:5001/GUI-is-still-open';
  fetch(url, { mode: 'no-cors'});
  setInterval(function(){ fetch(url, { mode: 'no-cors'});}, 5000)();
});
</script>
</body>
</html>
```

Eruption.html

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Volcanic Eruption</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static',
filename='style2.css')}}">
</head>
<body>
  <ul>
    <li class="typhoon"><a
href="/typhoon/">Typhoon</a></li>
    <li class="earthquake"><a
href="/earthquake/">Earthquake</a></li>
    <li class="covid"><a
href="/covid/">Covid-19</a></li>
    <li class="fire"><a href="/fire/">Fire
Accident</a></li>
```

```
    </ul>
<h2>Volcanic Eruption tweets in last 7
days</h2>
{% for table in tables %}
        {{ table|safe }}
{% endfor %}
<script>
document.addEventListener('DOMContentL
oaded', function() {

    var url = 'http://127.0.0.1:5001/GUI-is-
still-open';
    fetch(url, { mode: 'no-cors'});
    setInterval(function(){ fetch(url, { mode:
'no-cors'});}, 5000)();
});
</script>
</body>
</html>
```

Fire.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Fire Accident</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static',
filename='style2.css')}}">
</head>
<body>
    <ul>
        <li class="typhoon"><a
href="/typhoon/">Typhoon</a></li>
        <li class="earthquake"><a
href="/earthquake/">Earthquake</a></li>
        <li class="covid"><a
href="/covid/">Covid-19</a></li>
        <li class="eruption"><a
href="/eruption/">Volcanic
Eruption</a></li>
```

```
    </ul>
<h2>Fire Accident tweets in last 7
days</h2>
{% for table in tables %}
        {{ table|safe }}
{% endfor %}
<script>
document.addEventListener('DOMContentL
oaded', function() {
    var url = 'http://127.0.0.1:5001/GUI-is-
still-open';
    fetch(url, { mode: 'no-cors'});
    setInterval(function(){ fetch(url, { mode:
'no-cors'});}, 5000)();
});
</script>
</body>
</html>
```

Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport"
content="width=device-width, initial-
scale=1.0">
    <title>Recommendation</title>
    <link rel="stylesheet" type="text/css"
href="{{ url_for('static',
filename='style2.css')}}">
    <script
src="https://kit.fontawesome.com/79ef41a
232.js" crossorigin="anonymous"></script>
</head>
<body>
    <div class="title">
        <h1>Recommendation System<br>
<span>for Class Suspensions using Natural
Language
<br>Processing Techniques </span></h1>
```

```html
    </div>
    <div class="disaster">
      <h3>Choose Occurrence:</h3>
      <ul>
      <li class="typhoon"><a
href="/typhoon/"><i class="fas fa-cloud-
showers-heavy"></i>Typhoon</a>
        <img src="{{ url_for('static',
filename='typhoon.jpg') }}"/></li>
      <li class="earthquake"><a
href="/earthquake/"><i class="fas fa-globe-
asia"></i>Earthquake</a>
        <img src="{{ url_for('static',
filename='earthquake.jpg') }}"/></li>
      <li class="covid"><a href="/covid/"><i
class="fas fa-virus"></i>Covid-19</a>
        <img src="{{ url_for('static',
filename='covid.jpg') }}"/> </li>
      <li class="fire"><a href="/fire/"><i
class="fas fa-fire-alt"></i>Fire Accident</a>
        <img src="{{ url_for('static',
filename='fire.jpg') }}"/></li>
      <li class="eruption"><a
href="/eruption/"><i class="fas fa-
mountain"></i>Volcanic Eruption</a>
        <img src="{{ url_for('static',
filename='eruption.jpg') }}"/></li>
      </ul>
    </div>
<script>
document.addEventListener('DOMContentL
oaded', function() {
  var url = 'http://127.0.0.1:5001/GUI-is-
still-open';
  fetch(url, { mode: 'no-cors'});
  setInterval(function(){ fetch(url, { mode:
'no-cors'});}, 5000)();
});
</script>
</body>
</html>
```

Typhoon.html

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Typhoon</title>
<link rel="stylesheet" type="text/css"
href="{{ url_for('static',
filename='style2.css')}}">
</head>
<body>
    <ul
      <li class="earthquake"><a
href="/earthquake/">Earthquake</a></li>
      <li class="covid"><a
href="/covid/">Covid-19</a></li>
      <li class="fire"><a href="/fire/">Fire
Accident</a></li>
      <li class="eruption"><a
href="/eruption/">Volcanic
Eruption</a></li>
      </ul>
<h2>Typhoon tweets in last 7 days</h2>
{% for table in tables %}
      {{ table|safe }}
{% endfor %}
<script>
document.addEventListener('DOMContentL
oaded', function() {
  var url = 'http://127.0.0.1:5001/GUI-is-
still-open';
  fetch(url, { mode: 'no-cors'});
  setInterval(function(){ fetch(url, { mode:
'no-cors'});}, 5000)();
});
</script>
</body>
</html>
```

Style.css

```css
@import
url('https://fonts.googleapis.com/css2?fami
ly=Roboto+Slab&display=swap');
body {
    margin: 0;
    padding: 0;
    display:flex;
    justify-content: center;
    align-items: center;
    flex-direction: column;
    height: 100vh;
    background-color: #0d0f1b;
    /* background: url('three.jpg');
    background-repeat: no-repeat;
    background-size: 100% 100%; */
    /* background-color: #2d3436; */
    background-image: linear-
gradient(315deg, #2d3436 0%, #000000
74%); */
}
/* Hover */
ul li a:hover + img {
    opacity: 1;
    z-index: -1;
}
@keyframes animate {
    0%{
        transform: scale(1);
    }
    100%{
        transform: scale(2);
    }
}
.disaster img {
    position: absolute;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
    z-index: -2;
```

```css
    transition: 0.5%;
    opacity: 0;
}
.title {
    display:flex;
    justify-content: center;
    font-size: 16px;
    margin-top: 45px;
    padding-top: 30px;
    padding-bottom: 0;
    align-items: center;
    text-align: center;
    letter-spacing: 2px;
    color: #fff;
    font-family: 'Roboto Slab', serif;
}
.title h1 span {
    font-size: 22px;
    margin-top: 45px;
    padding-top: 30px;
    padding-bottom: 0;
    text-align: center;
    letter-spacing: 2px;
    color: #fff;
    font-family: 'Roboto Slab', serif;
}
 h3 {
 color: #fff;
 font-family: 'Roboto Slab', seirf;
 letter-spacing: 2px;
 font-weight: bold;
 padding-bottom: 20px;
}
.disaster {
    display:flex;
    justify-content: center;
    align-items: center;
    flex-direction: column;
    height: 60vh;
}
/* typhoon */
ul {
```

```css
        margin:0;
        padding: 0;
        display: flex;
    }
    ul .typhoon {
        list-style: none;
        margin: 0 20px;
        transition: 0.5s;
    }

    ul .typhoon a {
        display: block;
        position: relative;
        text-decoration: none;
        padding: 5px;
        font-size: 18px;
        font-family:  sans-serif;
        color: #fff;
        text-transform: uppercase;
        transition: 0.5s;
    }
    ul:hover .typhoon a {
        transform: scale(1.5);
        opacity: .2;
        filter: blur(5px);
    }
    ul:hover .typhoon a:hover {
        transform: scale(2);
        opacity: 1;
        filter: blur(0);
    }
    ul .typhoon a:before {
        content: '';
        position: absolute;
        top: 0;
        left: 0;
        width: 100%;
        height: 100%;
        background: #0a0796;
        transition: transform 0.5s;
        transform-origin: right;
        transform: scaleX(0);
```
```css
        z-index: -1;
    }
    ul .typhoon a:hover:before {
        transition: transform 0.5s;
        transform-origin: left;
        transform: scaleX(1);
    }
    /* eaqrthquake */
    ul {
        margin:0;
        padding: 0;
        display: flex;
    }

    ul .earthquake {
        list-style: none;
        margin: 0 20px;
        transition: 0.5s;
    }

    ul .earthquake a {
        display: block;
        position: relative;
        text-decoration: none;
        padding: 5px;
        font-size: 18px;
        font-family:  sans-serif;
        color: #fff;
        text-transform: uppercase;
        transition: 0.5s;
    }
    ul:hover .earthquake a {
        transform: scale(1.5);
        opacity: .2;
        filter: blur(5px);
    }
    ul:hover .earthquake a:hover {
        transform: scale(2);
        opacity: 1;
        filter: blur(0);
    }
    ul .earthquake a:before {
```

```css
        content: '';
        position: absolute;
        top: 0;
        left: 0;
        width: 100%;
        height: 100%;
        background: #837b06;
        transition: transform 0.5s;
        transform-origin: right;
        transform: scaleX(0);
        z-index: -1;
    }

    ul .earthquake a:hover:before {
        transition: transform 0.5s;
        transform-origin: left;
        transform: scaleX(1);
    }
    /* covid */
    ul {
        margin:0;
        padding: 0;
        display: flex;
    }
    ul .covid {
        list-style: none;
        margin: 0 20px;
        transition: 0.5s;
    }
    ul .covid a {
        display: block;
        position: relative;
        text-decoration: none;
        padding: 5px;
        font-size: 18px;
        font-family:  sans-serif;
        color: #fff;
        text-transform: uppercase;
        transition: 0.5s;
    }
    ul:hover .covid a {
        transform: scale(1.5);

        opacity: .2;
        filter: blur(5px);
    }
    ul:hover .covid a:hover {
        transform: scale(2);
        opacity: 1;
        filter: blur(0);
    }
    ul .covid a:before {
        content: '';
        position: absolute;
        top: 0;
        left: 0;
        width: 100%;
        height: 100%;
        background: #2fb315;
        transition: transform 0.5s;
        transform-origin: right;
        transform: scaleX(0);
        z-index: -1;
    }
    ul .covid a:hover:before {
        transition: transform 0.5s;
        transform-origin: left;
        transform: scaleX(1);
    }
    /* Fire */
    ul {
        margin:0;
        padding: 0;
        display: flex;
    }
    ul .fire {
        list-style: none;
        margin: 0 20px;
        transition: 0.5s;
    }
    ul .fire a {
        display: block;
        position: relative;
        text-decoration: none;
        padding: 5px;
```

```css
    font-size: 18px;
    font-family:  sans-serif;
    color: #fff;
    text-transform: uppercase;
    transition: 0.5s;
}

ul:hover .fire a {
    transform: scale(1.5);
    opacity: .2;
    filter: blur(5px);
}

ul:hover .fire a:hover {
    transform: scale(2);
    opacity: 1;
    filter: blur(0);
}
ul .fire a:before {
    content: '';
    position: absolute;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
    background: #d83d28;
    transition: transform 0.5s;
    transform-origin: right;
    transform: scaleX(0);
    z-index: -1;
}
ul .fire a:hover:before {
    transition: transform 0.5s;
    transform-origin: left;
    transform: scaleX(1);
}
/* erution */
ul {
    margin:0;
    padding: 0;
    display: flex;
}

ul .eruption {
    list-style: none;
    margin: 0 20px;
    transition: 0.5s;
}
ul .eruption a {
    display: block;
    position: relative;
    text-decoration: none;
    padding: 5px;
    font-size: 18px;
    font-family:  sans-serif;
    color: #fff;
    text-transform: uppercase;
    transition: 0.5s;
}

ul:hover .eruption a {
    transform: scale(1.5);
    opacity: .2;
    filter: blur(5px);
}

ul:hover .eruption a:hover {
    transform: scale(2);
    opacity: 1;
    filter: blur(0);
}
ul .eruption a:before {
    content: '';
    position: absolute;
    top: 0;
    left: 0;
    width: 100%;
    height: 100%;
    background: #93ac05;
    transition: transform 0.5s;
    transform-origin: right;
    transform: scaleX(0);
    z-index: -1;
}
ul .eruption a:hover:before {
```

```css
    transition: transform 0.5s;
    transform-origin: left;
    transform: scaleX(1);
}
/* TABLE */
.dataframe {
    text-align: center;
    overflow: hidden;
    width: 80%;
    height: 50%;
    margin: 50px;
    margin-top: 10px;
 display: table;
 color: #fff;
 padding: 0 0 0em 0;
 transition: 2s;
}
.dataframe td, .dataframe th {
    padding-bottom: 2%;
    padding-top: 2%;
padding-left:2%;
}
.dataframe td {
    font-family: 'Roboto Slab', serif;
    letter-spacing: 1px;
    padding-right: 25px;
    text-align:center;
}
/* Background-color of the odd rows */
.dataframe tr:nth-child(odd) {
    background-color: #323C50;
}
/* Background-color of the even rows */
.dataframe tr:nth-child(even) {
    background-color: #2C3446;
}
.dataframe th {
    background-color: #1F2739;
    text-align: center;
    font-family: 'Roboto Slab', serif;
    font-weight: bold;
    letter-spacing: 2px;
}
.dataframe th:nth-child(4) {
    padding-right: 25px;
}
.dataframe td:nth-child(4) {
    padding-right: 25px;
}
.dataframe td:first-child {
    color: #10b1e7;
    text-align: center;
    font-weight: bold;
    letter-spacing: 2px;
}


.dataframe tr:hover {
 background-color: #464A52;
-webkit-box-shadow: 0 6px 6px -6px
#0E1119;
    -moz-box-shadow: 0 6px 6px -6px
#0E1119;
        box-shadow: 0 6px 6px -6px #0E1119;
}

.dataframe td:hover {
background-color: #FFF842;
color: #403E10;
font-weight: bold;

box-shadow: #7F7C21 -1px 1px, #7F7C21 -
2px 2px, #7F7C21 -3px 3px, #7F7C21 -4px
4px, #7F7C21 -5px 5px, #7F7C21 -6px 6px;
transform: translate3d(6px, -6px, 0);

transition-delay: 0s;
    transition-duration: 0.4s;
    transition-property: all;
transition-timing-function: line;
}
@media (max-width: 800px) {
.dataframe td:nth-child(4),
.dataframe th:nth-child(4) { display: none; }
```

```
}
/* END TABLE */
h2{
    font-family: consolas;
    color: #fff;
    padding-top: 2em;

}
```

APPENDIX C

Plagiarism Report

Recommendation System for Class Suspension using Natural-Language Processing Techniques

by S

General metrics

46,206	6,306	487	25 min 13 sec	48 min 30 sec
characters	words	sentences	reading time	speaking time

Score

80

This text scores better than 80% of all texts checked by Grammarly

Writing Issues

397	85	312
Issues left	Critical	Advanced

Plagiarism

5 %
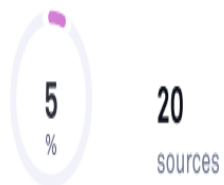
20 sources

5% of your text matches 20 sources on the web or in archives of academic publications

APPENDIX D

Curriculum Vitae

RAMOS , GIAN ADRIAN C.

Blk 5 Lot 25 Peter St. Cielito Homes Caloocan City
Email: gianramos999@gmail.com
Mobile Number: 09760393998

CAREER OBJECTIVES

- To seek a challenging assignment and responsibility, with an opportunity for growth and career advancement as successful achievements and willingness to learn.

SYSTEM DEVELOPMENT EXPERIENCE

- Experience different programming language like Visual Basic, C++, Java, Python,Javascript
- Experience Cisco switches, routers and TCP / IP networking and how to compute or get Broadcast Network, New Network (OJT)
- Basic understanding in Database Management System
- Experience Cloud Database (Pentaho)
- Developed "Precasha" Mobile Application
- Know how to make User Story
- Experience Basics of NodeRed Flows

WORK EXPERIENCE
- Utility Sales Clerk at Super Malls (Nov 2016 – Jan 2017)
- Software Engineer Consultant at Credence Analytics (June 16 2020 – March 15, 2021)

EDUCATION

BS in Computer Science
June 2014 (1 Semester)
STI Caloocan

BS in Computer Science
June 2015 - present
New Era University

Bureau of Internal Revenue
June 18, 2020 – September 18, 2020
Network Management and Technical Manangement Division
OJT

SEMINAR ATTENDED

- **Budgeting and Scheduling**
  Francis Marie Cayaco
  November 19, 2019

- **Introduction of Data Science using Python**
  John Jefferson C. Bautista
  November 20, 2019

- **Understanding UI/UX Design for Developers Perspective**
  Danmark Arqueza
  November 23, 2019

- **Root Cause Analysis**
  John Lyn Bautista
  November 23, 2019

- **Spring Microservices**
  Raymond Carlo Galima
  November 23, 2019

- **Employment Contract**
  Jofrank David Riego
  December 6, 2019

- **Data Science in the Era of Big Data: Predicting the next locus**
  Bryan Denver A. Cabantac
  December 9, 2019

- **Wireless Technology**
  Ramjie Marilla
  December 16, 2019

ZYRON C. VELASCO

No. 4 Alley 17, P. Bautista
Street Barangay Pansol
Quezon City
09351570255
09227936471
vzyron_00@yahoo.com

CHARACTER REFERENCES

Dr. LUISITO C. HAGOS
Faculty Member, NEU

Dr. ROSANNA V. IBARRA
Faculty Member, NEU
09153782638

Prof. JEREMIAS C. ESPERANZA
Faculty Member, NEU

OBJECTIVES

- Improve technical skills while collaborating with peers towards the company's goals
- Utilize knowledge in helping the company whilst continually improving skills.
- Contribute effectively and efficiently to the company while growing as a dedicated worker.

PERSONAL INFORMATION

Age	:	24
Date of Birth	:	March 12, 1996
Place of Birth	:	Balanga, Bataan
Gender	:	Male
Nationality	:	Filipino
Religion	:	Iglesia Ni Cristo

EDUCATIONAL BACKGROUND

Elementary	:	New Era University
		Quezon City
		2004 – 2009
High School	:	New Era University
		Quezon City
		2009 – 2013

1

INTERNSHIP EXPERIENCE

Accenture Manila Liquid Studio

19/F Uptown tower 3, 11th Ave. Bonifacio Global City Taguig-00 PH, Manila, 1634

SKILLS

- Python Programming
- Haskell Programming
- Database Management (DB2)
- Networking (
- Cisco Packet Tracer)
- Java Programming
-
- Web Programming (HTML, CSS, PHP and JavaScript)
- Basic knowledge in MS Office products (Word, Excel and PowerPoint)
- Basic knowledge in Tableau

SYSTEM DEVELOPMENT EXPERIENCE

- Implemented database design using IBM DB2 Express-C 9.0;
- Used Jasper Reports (an open-source tool) in generating reports of business transactions.
- Object-oriented Analysis and Design (OOAD) as implemented in java, C#, C++, PHP, HTML and CSS languages;
- Co-Developed a
- Mathematical Arithmetic game in partial fulfillment to Computer Programming 2.
- Tester in Scrum Team in Convict Management System in partial
- fulfillment to Software Engineering.
- Co-Developed a basic English-Tagalog translator or vice versa in partial fulfillment to Natural Language Processing.
- Co-Designed and Co-Developed a Web-based New Era University Events Attendance Monitoring System in partial fulfillment to Web programming.

SEMINARS AND WORKSHOPS

1st Philippine AI and Emerging Technologies Caravan
August 15, 2018
New Era University, University Hall

The Manners in OJT and At Work
February 7, 2019
New Era University, Multi-Purpose Hall, Professionals Schools Building

Learn. Fail. Succeed.: Arising Technology through Research and Entrepreneurship
February 2019
New Era University, Multi-Purpose Hall, Professionals Schools Building

Web Development using Kentico CMS
March 23, 2019
New Era University, Room B235

Selenium Portable Framework
March 16, 2019
New Era University, Room B235

Web Development using AngularJS
March 21, 2019
New Era University, Room B335

Design Thinking 101
July 17, 2019
Accenture Manila Liquid Studio

Agile Delivery
July 25, 2019
Accenture Manila Liquid Studio

User Experience (UX)
August 5, 2019
Accenture Manila Liquid Studio

JANN DARYLE V. LAMSON

#12 Dalton St. Brgy Holy Spirit

Luzon Ave, Quezon City

Phone No: +63 995 965 2353 | **Email**: janndarylelamson@gmail.com

To contribute my skills in software developing and to gain experience and knowledge thru work experience.

#SKILLS

- Database Management (IBM DB2 and IBM Cloud SQL Query, MySQL)
- Java Programming (Eclipse and NetBeans)
- Web Programming (HTML,CSS and Vanilla JavaScript)

#SYSTEM DEVELOPMENT EXPERIENCE

- Implemented database design using IBM DB2 Express-C 9.0;
- Used Jasper Reports (an open-source tool) in generating reports of business transactions.
- Knowledgeable in Object-oriented Analysis and Design (OOAD) as implemented in java, C++,PHP,HTML and CSS languages;
- Documented case studies by using Lucidchart diagramming tool for flowcharts, entity-relationship diagrams (ERD), use-case diagrams, system sequence diagrams, sequence diagrams, and class diagrams
- Developed an Text-Twist game using Java.
- Developed an Food Ordering System using Java.
- Tester in Scrum Team in Customer Management System in partial fulfillment to Object Oriented Programming.
- Developed an English-Tagalog translator or vice versa in partial fulfillment to Natural Language Processing.
- Developed an MINI compiler in partial fulfillment to Programming Languages.
- Designed and Developed an Obstacle Avoiding Robot Car in partial fulfillment to Robotics.
- Designed and Developed a Web-based New Era University Events Attendance Monitoring System in partial fulfillment to Web programming.

#EDUCATIONAL BACKGROUND

Tertiary:
New Era University
Bachelor of Science in Computer Science