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A Fake News Seeker to Detect Fake News in Social Media

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Abstract:

The development of environments that permit immediate communication and information distribution is a result of the advancement of technology. False news, article manipulation, a loss of confidence in the media, and information bubbles have consequently developed into high impact issues. In this context, there is a growing demand for automated technologies that can categorize content as trustworthy or unreliable and that can provide a trustworthy environment. Because of the task's high degree of difficulty and dependence on variables like language, news source, and subject volatility, current solutions do not fully resolve this issue.The purpose of this study is to build an application which can detect fake news. When the interaction between social media and society gets higher, it has become easier to fabricate news to mislead society. The problem is that some organizations had been fabricating news with factually inaccurate data for their benefit. Recent events have been proven that; fabricated information can have huge impact on society. Studies that had been done on this subject area are quite a few.The proposed solution, Fake News Seeker application,is to explore a method to gives a visual representation of true news and the sources used for verification and also if fake news detect,true information about that incident will be display with the help of the machine learning techniques. With help of the collaborative filtering, News Seeker can recommend news articles according to user's preference.

Keywords —Natural Language Processing, Machine Learning, Fake News Detection.

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I. INTRODUCTION

Traditional media consists of mostly nameless and faceless people deciding what does and what does not get printed and broadcasted to the public. In this new era of internet and with a variety of social media available, creation and consumption of news and information in the society is changing. The rapid transformation of traditional print media into online portals has becomes a new trend. On the other hand, online social media has democratized the means of news production and dissemination, also, it has become a breeding ground for false and fake news. The increase use of mobile devices and easy Wi-Fi access to 3G/4G networks, then Facebook, Instagram, YouTube and Twitter being powerful platforms for providing news and entertainment has been a major way for this fake news to spread rapidly. The proliferation of misinformation on social media platforms are faster than the spread of the Corona virus disease.

A. Problem Statement

Facebook, a well-known social networking platform, claimed that during the months of March and April of 2020, warning labels were placed on almost 90 million pieces of content related to Covid-19 because they were associated with fake treatments, anti-vaccination propaganda, and conspiracy theories (Solon, 2020). The public shopping habits in regard to buying personal protection equipment displayed an odd pattern as a

result of the panic caused by this misleading news. Moreover, people may eat harmful chemicals as a result of disinformation about health on social media. The misinformation impact is also connected to purchasing and ingesting medications without a prescription from a doctor, in addition to other factors.The virus is being created in a lab for use as a biological weapon, religious fundamentalists are spreading false information that praying to God can protect you from getting Covid-19, and so on. This misinformation regarding Covid-19 is creating in many different ways.

So fake information can make situation worst because of the decision made on incorrect information could never be correct. Therefore, this research aims to evaluate the impact of such fake information on any emergency situation and develop mechanism with the use of information technology to assess the correctness of information received.

B. Fake news and COVID 19

An "infodemic" has been sparked by the COVID-19 situation and an increase in the volume of online misinformation (Brennen et al., 2020; Kouzy et al., 2020; World Health Organization, 2020). It has been proposed, for instance, that exposure to COVID-19 fake news may weaken rules on social distance or encourage readers to self-medicate with unapproved medications. Anecdotal accounts of harms caused by such fake news items are common(Bavel et al., 2020). Computer modeling implies that exposure to false health news may have a negative impact on the public's response to a disease outbreak (Brainard et al., 2020), but no actual evidence of this has been shown. We are aware of only one study that has attempted to trace the behavioral impacts of fake news in any setting, despite the fact that some researchers have presented evidence that disinformation may affect beliefs and attitudes (Drummond et al., 2020). Many studies have shown that a variety of factors, such as repeated exposure to the information and whether the misinformation fits with a person's preexisting ideas or social identity, can affect susceptibility to misinformation ((Frenda et al., 2013; Greene et al., 2021; Kahan, 2017; Murphy et al., 2019).

C. ComparisonofSimilarResearch,ProductsandTechnologies

News plays animportantrole ineveryone's life.Mainly two types ofnewscategories areidentified,andtheyarerealnewsandfakenews.Fake newshasasignificantimpactonoursociallife and a study show that identification of fake news is a challenging task(VlachosandRiedel,2014). Fake news detectionis an emerging research area which is gaining interest but is involved with some challenges dueto the limited number of resources (i.e., data sets, published literature) available (Ahamed et al., 2017).Inthissectionacriticalevaluationaboutthesimilarproducts,researchesandthe technologies &featuresusedinthose respectiveproductswillbeprovided (Ahmed et al., 2017)

D. ComparisonofCommercialProducts

In the world, there aren't many apps for detecting fake news. As a result, testing was carried out by downloading the relevant apps. Because implementation details for these commercial apps are not available, information from online websites has been gathered. The feature comparison chart between five products is shown below.

TABLE 1
FEATURE COMPARISON CHART

Features	*News Seeker*	*Google News*	*News Cop*	*Test News*	*Watch Dog App*
Identifyingrealnews	✓	✓	✓	✓	✓
Identifyingfakenews	✓	✗	✓	✓	✓
Searchfor News	✓	✗	✗	✓	✗
Accuracyofnews	✓	✓	✓	✗	✗
News Recommendationbasedon user Preferences	✓	✓	✗	✗	✗
UsingMachine Learning to Filter thenews	✓	✓	✓		✗
Discussionforum	✓	✗	✓	✗	✗
UserRegistration	✓	✓	✓	✗	✗

The first app tested was 'Google News' (Table 1 column Three). Google News can beaccessed via their website or the app they have created. For testing purposes, the Google Newsapp was tested so that it would be easier to compare with other similar apps. All types of newsavailable to view and watch on google news, but it was unable to find out if the news wererealor fake.Google newsuserscanfind news inanylanguagein anycountry, butotherapplications did not have that feature. One of the most important features of Google News isthat they categorize their news as sports, entertainment, business, health, politics etc. andGoogle News suggests new news to the user using previously searched news by the user. Insummary the only flaw found in Google news is that it doesn't have ability to filter fake newsfromrealnews.

The next app tested was 'NewsCop' (Table1 column Four). When the app was tested itresponded really well for the news items that have been already searched, but the app wasunabletogiveaquickresponsetonewnewsitemsre leased.Additionally,italsodoesnotprovidea feature to search for a news item, but it allows the user to post a news item to get the public'sopinion about the news item. Another thing that was identified was the ability to choose newsbased on the preferences of the user. Even though the app allowed the user to select the newscategory they want, it does not suggest news items on the poll based on the user's preferences.In summary the main flaws in the 'NewsCop' app was that it does not have the timeliness andtheability tosearchforaspecificnews item.

The next app tested was 'Test News' (Table 1. column Five). This was the only app that hadthe ability to search for a specific news item. There was no evidence to be found if the app wasusingmachinelearningforthenewsfilteringproce ss.Theappperformedreallywellbutthemainflawiden tifiedwasthattheinformationprovidedbytheappwas notaccurateandtheinformation provided was not timely. Other than that, it lacked some features such as newsrecommendation based on user preferences, user registration and a discussion forum to discussaboutthenewswhicharenotfully verified.

Thelastapptestedwasalocalappnamed'WatchDog'(Table1columnSix).Theappdoesn'tusemachinelear ningtechniqueswhenfilteringthefakenewsfromther ealnews.They(WatchDog Team) filter the news manually and then the news is uploaded. This process takes along time and all the news cannot be covered in such a short time period. Other than that, theapp also lacked some features such as accuracy of the news, user registrations, searching fornewsitems,newsrecommendationbasedonuserpr eferencesandadiscussionforum.Themainflawinthis appwasthattheinformation wasinaccurateandnottimely.
Insummarymostoftheappslackthetimelinessofinfor mation,accuracyoftheinformation,theability to search if it's a fake or real news item, and most importantly they don't use machinelearningtofilterfakenewsfromrealnews.Th emainreasontofocusontimelinessisdueto'TheGolde nRuleofInformation' (Figure 1).

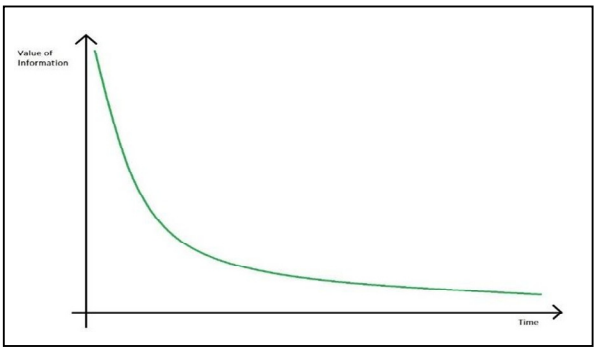


Figure 1 GoldenRuleofInformation

AsshowninFigure1.thevalueofinformationdecreasesovertime,henceyouneedtoshowthe information as soon as it is released. By automating this process, all the news can be filteredmore accurately, efficiently and with more speed. This will make News Seeker comparativelybetterthan thecompetitor's apps.

E. DataRepresentation

Since the computer cannot understand the language of the humans it should be represented inawaythatthecomputerunderstands.Asimpleandefficientwayofrepresentingdataisthe"bagof words" approach which is used in natural language processing. Going through this process isessentialbeforefeedingitintoaclassificationalgorithm(Chen,2015).Thisdatapre-processingtechniquewillincrease the efficiency of the machine learning algorithm since some of the machine learningalgorithms use a specific format of data. In this model "bag of words" the text is represented ina bag or in other words in a multiset regardless of its grammar and even the order of the words,butitstoresthemultiplicity ofeachword.

F. Removal ofthe StopWords

Stop words are the most common words used in any language such as a, an, the, in, etc. thesestopwordsdoesn'tcarryanyamountofdiscriminatingpowerandthereforeneedstobeeliminatedbefore creatingthe"bagofwords"model.Themainreasontodothisistoreducethespace that these words use and also to increase the processing speed (Kumbhar et al,2020). These types of words are mmuchrelevantintheprocess,ifawordoccursinthedocumentahighernumberoftimesthatword carries a higher level of relevancy. Which means the local frequency of each word in thedocumentisproportionaltotherelevancyofthatearchword.Termfrequency–inversedocument frequency is focused on removing the stop words from the document by calculatingits relevancy. Term frequency – inverse document frequency is a numerical and a statistical wayofcalculatingthe importance ofawordtoadocumentinacollectionof them.

$$TF(w,d) = \frac{occurences\ of\ w\ in\ document\ d}{total\ number\ of\ words\ in\ document\ d}$$

$$IDF(w,D) = \ln\left(\frac{Total\ number\ of\ documents\ (N)\ in\ corpus\ D}{number\ of\ documents\ containing\ w}\right)$$

$$TFIDF\ (w,d,D) = TF(w,d) * IDF(w,D)$$

The IDF is lower on the stop words compared to the other words in the document. The stopwordshaveahigherdocumentfrequency.Whichmeans,thenumberofdocumentsinthecorpuscontaining that word is higher. So, as mentioned earlier, these stop words are identified andbefore proceeding to the model content-based features using the "bag of words" model, thesestopwords arediscarded.

G. FactChecking

Fact checking is the process of verifying various information in nonfictional and fictional text in order to determine its accuracy and veracity. Although fact checking is a difficult task, various lexical features can help us understand the differences between more reliable and less reliable digital news sources. To archive this task, it is necessary to train a long short-term model that will take the sequence of words and predict the rating for this specific statement (Chen. 2015). A long short-term memory model is a type of artificial recurrent neural network architecture used in deep learning. Thiswill store the previous inputs to the system in other words it will

remember the inputs to thesystem to optimize the performance. This has the ability to process single data points as well asan entiresequenceofdata.

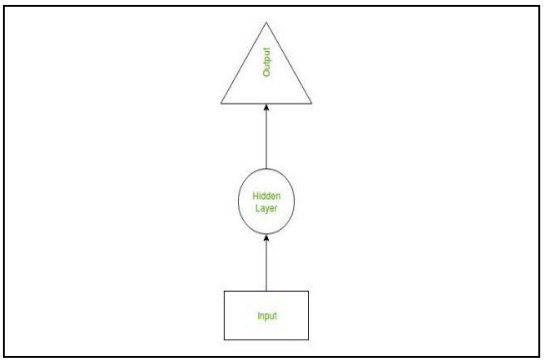


Figure2 FactChecking

H. StanceDetection

To identify if the news is fake or not first, it is required to find out on which side of the debate isthe user or the author is on, to fulfil that requirement, the technique stance detection will beused. The stance detection will mainly be used when it is needed to find evidence about theuser's claim(Rashkin.,2017). This technique will be able to find out about if the user's claim is agreeable or notbygoingthrough variousdocumentsandsearchingthroughthem.

I. AlgorithmicAnalysis

According to recent studies, fake news is detected 76% of the time. By cross-referencing with other stories, linguistic analysis could be used to detect fake news even when it is new. Linguistic analysis takes a unique approach, examining quantitative characteristics such as grammatical structure, word alternative, punctuation, and complexity (KruscheandAlperowitz,2014). The data sets will be fed into the systems, which will be trained to detect fake news. Participants in the study were paid to turn short, actual news stories into similar but fake news items, mimicking the journalistic style of the articles, using Amazon Mechanical Turk (Ståhl and Bosch, 2017). At the end of the process, the research team had a data set of 500 real and fake newsstories(Fakenewsdetector algorithmworksbetter thanahuman,2020).

2. METHODOLOGY

A. Researchapproach

In addition to the actual research phase, the research strategy is a crucial part of the project because it allows the developers to communicate their expectations and hypotheses through prototypes. To archive a well-developed application in a short amount of time, development methodologies should be used. Deductive approach and inductive approach are the two sub-phases that make up this research approach phase. While the inductive technique will provide a deeper grasp of new theories through obtained data, the deductive approach will concentrate on testing the creators' hypotheses. This research will be carried out utilizing a logical approach with the intention of identifying fake news and suggesting the pertinent accurate news for that circumstance.

B. ProcessModel

Programming frameworks are determined, planned, implemented, and tested using process models, which are organized collections of actions. A software process model is an abstract illustration of a process that illustrates the process as seen from a certain angle.

The Iterative Process Model will be utilized for this project out of all the existing software process models, such as the Waterfall Model, the Incremental Model, the Agile Model, the Spiral Model, etc. The Iterative Process Model focuses on an initial, basic set of user features, which then gradually becomes more sophisticated and full of features until the final system is achieved.
Little sets of the software requirements will be established across the application components while using the iterative process model. As there would be fewer iterations, the application development and testing process would be easier.

C. AnalysisandDesignapproach

The analysis and design approach have been chosen using the Object Oriented Analysis and Design (OOAD) methodology. The OOAD technique improves the readability and reuse of the code while reducing system difficulties. We'll use the iteration approach for implementation, as was indicated previously. The New Seeker application's versatility will enhance by adhering to the Object-Oriented Principles (Encapsulation, Inheritance, Abstraction, and Polymorphism). This paradigm builds interactions between system components by treating them as individual objects. The system's efficiency will rise as a result.

D. ProgrammingMethodology

- Natural Language Processing and Machine Learning will be used for the project with OOPmethodology.
- BehavioralDesignPatternwillbeusedintheappli cationsincetherearesomepredictionsforusers.
- Implementations will be done using the Multi-Level Detection Approach, Observer patternandModel-View-Controller(MVC).

E. TestingMethodology

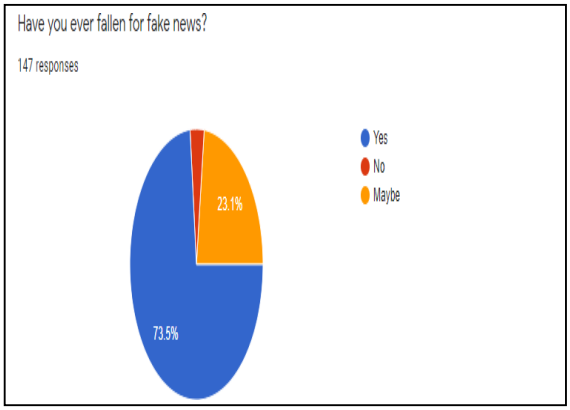
The testing for the project will be done using the IEEE 829-2008 test plan template, which is the IEEE Standard for Software and System Test Documentation. Unit testing, performance testing, usability testing, compatibility testing, and load testing are a few of the testing approaches that will be used.

3. RESULTS AND ANALYSISOFTHE GATHEREDDATA

A. Questionnaire

Thisquestionnairewasdevelopedtoidentifytheusers ’perspectivesonthefakenewsdetectionsystem.Oneh undredandforty-sevenresponseswererecorded,andthoseresponsesha vebeenevaluated.

Figure3 Fallen% forfakenews



Thisquestionwasusedtogetaproperunderstandingab outthenumberofpeoplewhohasfallen forfakenews.OutofthepeoplewhorespondedtotheG oogleform,73.5%ofpeoplehavefallenfor fake news while 23.1% of people have responded saying that they might have fallen for fakenews.Minorityof the peoplementionedthattheyhaven’tfallen forfakenews.

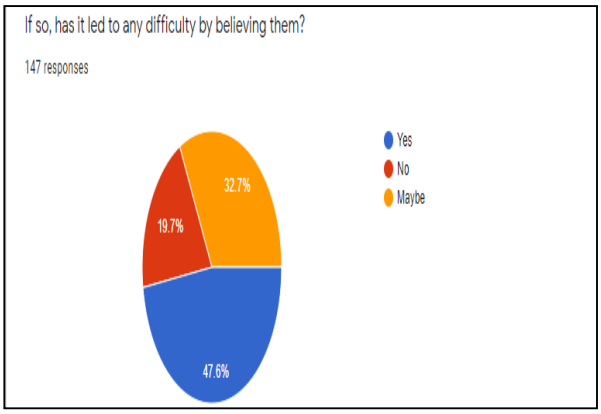


Figure 4% Difficultybybelievingfake news

This question was used identify whether people have faced any difficulties by believing in fake news. 47.6% people have faced difficulties by believing in fake news and 32.7% people responded saying that they might have faced difficulties. Meanwhile, less than 20% of the responses shows that a small segment of people hasn’t faced any difficulties by believing fake news.

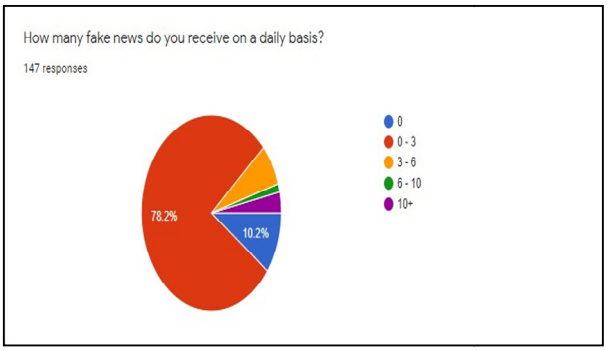


Figure 5 Number of fake news receive on a daily basis

This question was used to get a rough idea about the number of fake news people receive on a daily basis. More than 75% of the responses are about that people are receiving 0-3 fake news on a daily basis.

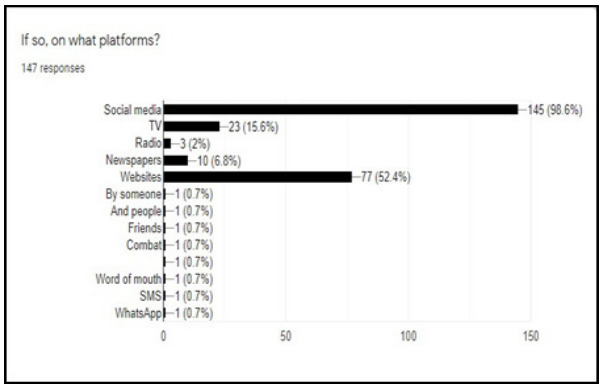


Figure6 Type of platforms in fake news

This question was a multiple-choice question and was used to identify the platforms that havebeenprovidingfakenews.Majority(98.6%)ofth eresponsesrepresentsocialmediaasthemainplatform thathasbeenprovidingfakenews.Also,morethan50 %ofpeoplehaveexpressedthatwebsitesalsoprovidea considerableamountoffalse news onadailybasis.

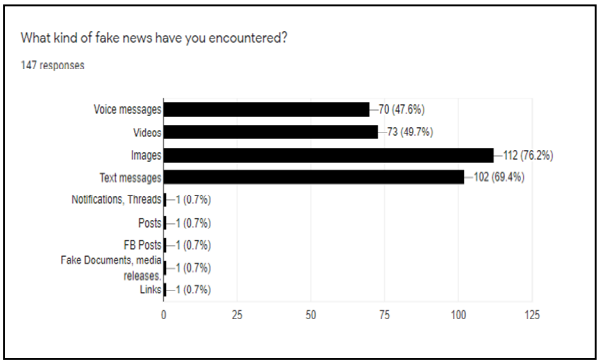


Figure7 Type of fakenewsencountered

This was a multiple-choice question and was used to get a rough idea about the file type of thefake news. 76.2% of the people expressed that mainly false news was provided through imagesand69.4%oftheresponsesrepresentthatacons iderableamountoffakenewsisspreadthroughtext messages. People who encountered this fake news might have been misled to a certainextent.

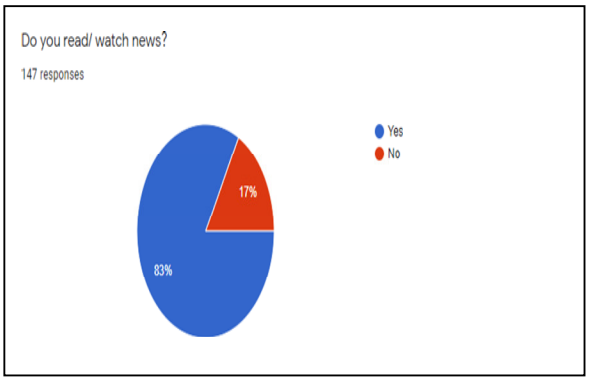


Figure8 Doyouread/watchnews?

Thisquestionwasusedtofindoutwhetherthereponde rshavebeenreadingorwatchingnews.Majorityofthe pie-chartrepresentsthattherespondershavebeenwatchin gorreadingnews.

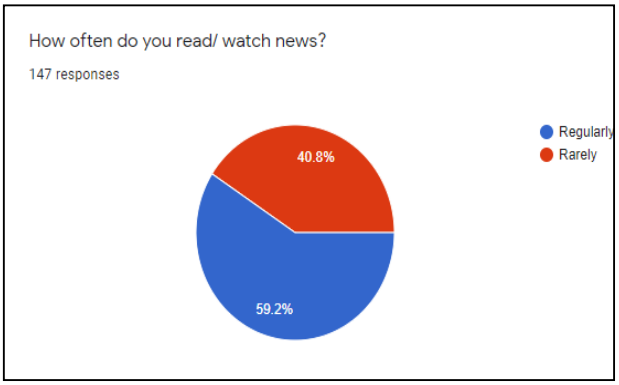


Figure9 Number of timeread/watchnews

This question was used to figure out whether the responders are watching or reading news on aregular basis. Majority (59.2%) of the chart represents that the responders are watching orreadingnews regularlywhile 40.8%respondedtothatas "Rarely".

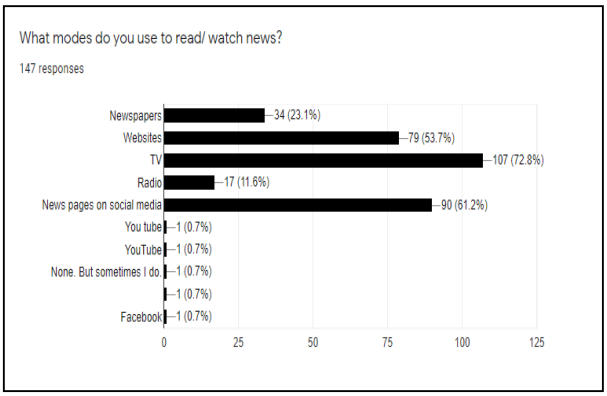


Figure10 Modesuseto read/watchnews

Thisquestionwasusedtounderstandthemodesusedto watchorreadnewsbytheresponders.Out of the responses most have responded to TV, news pages on social media and websites. Aconsiderablenumberofresponsesrepresentthatpeo plealsousenewspapersandradiostoreadandtolistent onews.

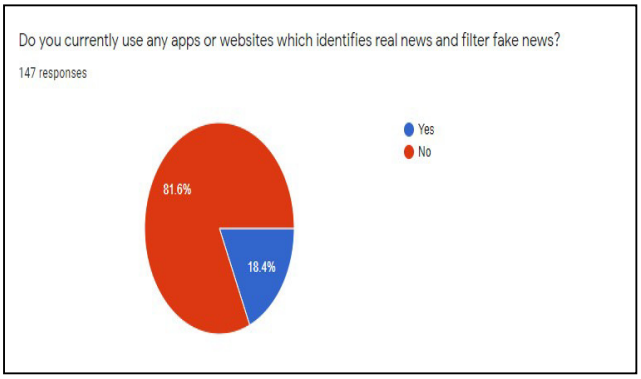


Figure11 Currentlyuseanyappsorwebsiteswhichiden tifiesrealnewsandfilterfakenews

Thisquestionwasusedtogettoknowwhethertherespon dersuseanyappsorwebsitestofilterand identify fake news. More than 80% of responders do not use any apps or websites to filterand identify fake news. This shows that majority of the people could face difficulties by beingmisled by fake news.

Less than 20% of responders use apps or websites to identify real news byfilteringfakenewsoff.

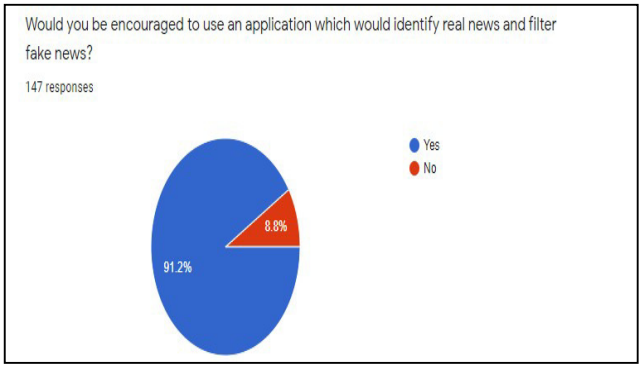


Figure 12 Encouraged to use an application which would identify real news and filter fake news

This question was used to figure out whether the responders would be encouraged in using anapplicationwhichwouldidentifyrealnewsandfilter fakenews.Morethan90%oftherespondersare encouraged to use an application to detect fake news. This gives clarity that there is a needfor afakenews detectionsystem.

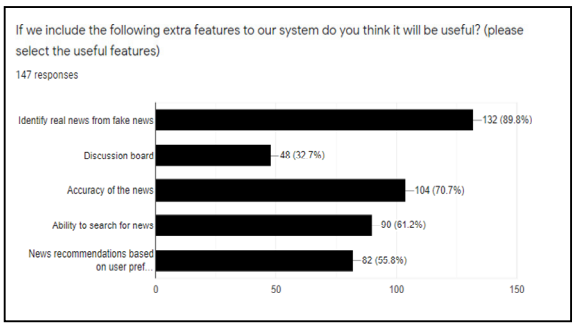


Figure13 Ifweinclude thefollowingextrafeaturestooursystem doyouthink itwillbeuseful?

Thisquestionwasamultiple-choicequestionandwasusedtogetanopinionfromtherespondersswhether News Seeker shouldinclude the above features. Out of the responses, most hadresponded to identifying real news from fake news, accuracy of news and the ability to searchfornews.Butotherfeaturesalsoshowaconsiderablenumberofresponsesabouttheirusefulnesstothe“ NewsSeeker”application.

B. Design

In the section on System Requirements Specification that was previously covered, functional and non-functional requirements, models, and strategies for gathering requirements were all discussed. The design of News Seeker, including the High-Level Architecture diagram, Sequence diagram, Class diagram, Activity diagram, and Wireframe diagram, will be explained in this article.

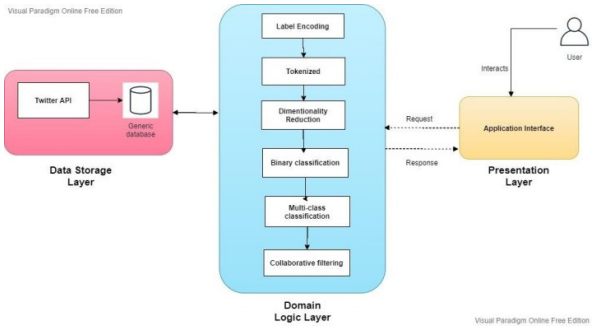


Figure14 HighLevelArchitectureDiagramforNews Seeker

Above figure represent the high-level architecture diagram of News Seeker application. Thearchitecturediagramconsistsofdatastoragelayer ,domain layerandpresentationlayer.

Data Storage layer is about the measurements that have been taken out to store data. NewsSeeker use twitter APIs to pass data to the database.Modular approach of the backend logic isexplainedthroughDomainlogiclayer.Presentation layerillustratethefrontendoftheapplicationwhichwas developed using androidstudios.

4. DISCUSSION

The system's requirement specifications, which covered stakeholder analysis, requirement collection, data analysis, models, and functional and non-functional requirements, were covered in the preceding chapter. This chapter, which serves as the project's last chapter, will go over the data set component as well as legal, social, ethical, and professional considerations as well as the strategies for implementing News Seeker.

A. Dataset

The required first data set for this project was acquired from the website “Kaggle.com”. It is anin-detail data set with 23524 fake news and 21418 real news. The fake and real news CSV filesinclude4fields.Theyaretitle,text,subjectanddate.ThisdatasetwaspublishedbyMr.ClémentBissailon .

Theseconddatasetcontainsfilesfrom“IEEE.org”.Thisfilehastwodatasets.ThefirstoneisFakeNews Detection (Fake Newsnet) and that data set has three CSV files. The Development CSV fileincludes8fieldsand1059news.TheTestCSVfilealsoincludes8fieldsandhas1055news.Finally,the Training CSV file contains 8 fields and 15213 news. These three CSV files have 8 fields andsome ofthemareid,date,speaker,statement,sourceetc.
The next data set is Fake News Detection (LIAR). It also has 3 CSV files like the first data set

asTest, Development and Training. 1266 news are included in the Development CSV file. The Testfile has 1267 news and the Training file has 15053 news. These three data sets have 8 fields likeFake News Detection (Fake Newsnet).The specialty of these data sets is that they do notspecify whether the news is true or false. Mr. Amir JalalyBidgoly and Mr. Hossein Amirkhanicreatedthesedatasets andpublishedthemto"IEEE.org".

Due to the lack of data sets for this project, verifying news using popular websites will also betested inthedevelopingstage.

B. Legal,social,ethicalandprofessionalissues

When conducting a project like this it is very important that all the legal, social, ethical andprofessional issues during the project are handled accordingly. In the following topics there willbean explanationof how theteammanagedtoresolve alltheissues mentionedearlier.

1. LegalIssues

In the process of developing News Seeker, a higher level of priority was given to data protectionlaws and to make sure that none of those laws will be broken in the process. Information will beusedfromwebsitessuchasAdaDerana,BBCetc.and thedatasetwhichwillbeusedisavailableto the public. The terms and conditions of such websites as well as the data set was carefullyreviewed, and it will be priority to make sure that the information on the data set will not bemisused or altered in anyway. Most importantly it will not be used to conduct any sort of illegalactivities.

It was made sure to not gather any personal information in the questionnaire conducted, thatcould breach the user's privacy. The data gathered from the questioner will be treated withutmost confidentialityandwillonly beusedtounderstandtheirrequirements.

Allthesoftwarethatis/wasusedwerelegallypurchased suchasAdobePhotoshopandMicrosoftOffice.
Some Online tools were used to design some of the diagrams creatively. For an example,these entry level tools were available for the public to use for free of charge. Therefore, it didn't needanylicensing.

2. SocialIssues

The project News Seeker does not have any major social or cultural affect. However, since thegeneral public can comment on the discussion forum about news, which are not verified, theproject could have a very low level of impact on the relevant news category. Even though newsis used by almost everyone in the world, people with low literacy skills won't be able to use theapp.Since,forthesearchingnewsfeatureitwillrequirefortheusertotypeandinputthenews.As a solution, image processing and voice processing will be added in the future versions.Additionally,fortheprototype,themodelwillonlybecreatedusingEnglishlanguage.Thismightaffect the people who do not understand English. Multi-language support will be added later onin afutureversion.

3. EthicalIssues

At the beginning of the survey for News Seeker, permission was requested from the respondersto represent their identity through an email. The responses from the survey have been analyzedin the SRS chapter. In order to protect the identity of the users, their personal information (e-mail addresses)hasn't been included inthe SRS chapter. The data sets that have been used in this project are visible to the public. The data in the givendata sets have been utilized in a secure way to minimize the damage caused to the victim'sidentity. The source code or the link of the data sets were not shared through sharable open-media, through a private Google Drive cloudaccount(privatesecuredenvironmenttohandlet

he information).

4. ProfessionalIssues

Thedatasetrequiredforthisprojectwasacquiredonlin efromawebpagewhereitwasavailableforthepublicto acquireforfree.Manyotherattemptsalsoweremadeto acquireadatasetfromlocal corporations in a professional way by producing a letter to the respective corporation. Thequestionnaire was distributed amongst people via e-mail and the people were given ample timeto be prepared in order to answer it. They were well informed on how the data gathered wasgoingtobeutilizedinaid totheprojectandtheirpermissiononutilizingthedata wasrequestedfirst.Thisunderlinestheprofessionalis mtakeninto considerationthusfar.

C. Plans for Implementation

1. ContinuousDelivery

ContinuousDeliveryistheabilitytogetchangeofallty pesincludingnewfeatures,configurationchanges,bu gfixesandexperimentsintoproductionorintothehand sofusers,safelyandquicklyin a sustainable way. S. Krusche has introduced CD into multi customer project courses andevaluated its usage, experience and benefits. There is a rapid trend in investment on CD due toits benefits such as improved productivity and efficiency, reliable releases, improves customersatisfaction,acceleratedtime tomarketandmakingthe rightproduct.

2. ContinuousDeployment

According to Amazon, CD signifies that each change committed ensures that it is ready for production and that Continuous Deployment will immediately apply to it there. Several researchers today employ the continuous deployment automation strategy to improve the efficiency of their job. According to Rahman et al., continuous deployment has sped up the processes in agile methodologies. They name Facebook, GitHub, Netflix, and Rally Soft as examples of companies that effectively employ continuous deployment on their production deployments. Changes are immediately deployed to production through a deployment pipeline after developers commit them.

5. CONCLUSION

This research project presents a solution for a fake news filtering system using machine learning(ML) and natural language processing (NLP). For this project the existing products, technologiesandresearchwerecriticallyanalyzedan dthebestfeaturesofeachandeveryoneofthemwaside ntified in order to identify the feasible solution. The requirements for the system wereidentifiedusingaquestionnairethatwasgiventot hegeneralpublicsincethemaintargetmarketfor this is them. Some of the features for the software was added from competitor products butallthosefeatureswillbeimprovedwhentheyareim plementedintheproject.Inordertoidentifythe most suitable project management method a thorough evaluation was done between theexisting methodologies and iterative model was selected for the software development lifecycle(SDLC) of this project. The design for the prototype was first designed using UML diagrams andthen all the information required for the designing part was gathered based on that. Finally, intheconclusionthemainapproachforthisprojectand theplansforimplementationarethoroughlyexplained .

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