Psychological wellness effects Analysis and Disease Control alongside Prevention of COVID-19 Pandemic using Artificial Intelligence based Chatbots

ANJIT RAJA R [1], NAGARAJAN B [2]

[1] *Department of CS with CS, Dr.N.G.P.Arts and Science College, Coimbatore, India*

[2]*Department of CSE, KPR Institute of Engineering and Technology, Coimbatore, India*

Abstract— **The Coronavirus or COVID-19, as a flare-up of respiratory ailment brought about by a novel coronavirus that has now been identified in excess of 130 areas globally. The infection has been named SARS-CoV-2 and the sickness it causes has been named coronavirus disease 2019. In our research focused on suicide that mankind has searched for very. The effects of coronavirus on passionate prosperity have not up reasonable to predict that this impact of the disease will have an undulating sway on national and generally speaking suicide events, especially reliant on flow insane open reactions on informal communities, including some shared bewildering clinical uncertainty by patients. Computerized reasoning couldn't just assistance with the diagnostics and early discovery of psychological wellness issues, however it could likewise partake genuinely in the administration of scatters. When contrasted with a human specialist or analyst, the most profitable highlights of keen calculations could be their secrecy and openness. Man-made cognizance based really shrewd chatbot *emanam* and *psych-5*, solidifies techniques for abstract lead treatment, rationale social treatment with guided thought, breathing, and yoga.**

Index Terms – **Artificial Intelligence, Sentiment, Interface, Calculations, Video**

I. INTRODUCTION

The WHO had before foreseen that by 2020, around 20 percent of the Indian masses will encounter the evil impacts of useless practices. That suggests, today, more than 200 million Indians may have mental ailments. The parental figures for India's enthusiastic health crisis consolidate 9,000 specialists. That is one pro for each 100,000 people [1]. Expecting, as studies show up, that the perfect number of experts is three for each 100,000 people, India has an absence of 18,000 mental health problems. The WHO figure, in any case, was before the scene of the novel coronavirus.

Refreshed headway in personal computers and web has driven scale and nature of information to be improved in different zones including social insurance divisions [2].

Humanized perception has anticipated a vital movement in enough assessing those immense information, at any rate a general disarray of AI estimations regardless of everything exists in applying them.

Reproduced information systems can settle an issue of minimal model size, or huge learning is the Machine Learning presuming. This paper watched out for the examination of diagnosing mental maladjustment utilizing AI estimation and proposes how AI structures can be utilized and worked in every way that really matters [3]. This investigation has perceived two man-made thinking based chatbots specifically *emanam* and *psych-5* that examined mental wellbeing issues precisely over a model conversation of crown corrupted patients. A relationship is made on these two chatbots conversation using AI strategies and recognized the best logs used to help mental health specialists in diagnosing passionate prosperity issues. Statistics say that every 40 seconds one person dies from suicide and for every adult who dies from suicide, there are more than 20 others who have attempted to end their life [4]. We center on a few instances of emotional wellness explore utilizing AI Algorithms and examine AI Algorithms utilized for those looks into and their presentation.

II. OVERVIEW OF AI TECHNIQUES

Artificial Intelligence brainpower is a thought that has swayed through many promotion cycles over numerous years as researchers and science fiction visionaries proclaimed the fast approaching appearance of reasoning machines. In our examination we actualized the heart considering AI into chatboting framework [5]. Between 2018 and 2019, organizations that have deployed artificial intelligence grew from 4% to 14%, according to Gartner's 2019 CIO Agenda survey [6]. AI is reaching organizations in many different ways compared with a few years ago, when there was no alternative to building your own solutions with machine learning. AIDP-2020 Platforms are depicted in Fig. 1.

AutoML and intelligent applications have the greatest momentum. Conversational AI remains at the top of corporate agendas spurred by the worldwide success of Amazon Alexa, Google Assistant and others.   New technologies continue to emerge such as augmented intelligence, edge AI, data labeling and explainable AI [11].

III. CHATBOTS AND THE ADVANCED WORKFORCE

Emanam and *psych-5* are the new AI supported chatbots, it is human friendly and reflect their behavior by statistical way for their personal psychological improvements. 72% of psychology specialists will collaborate with conversational stages regularly [12]. This normal development is comparable to the expansion of recent college grads in the work environment. Since chatbots take into account recent college grads interest for moment, computerized associations that stay up with the latest consistently, twenty to thirty-year olds will probably large affect how well and how rapidly associations embrace the innovation [13].
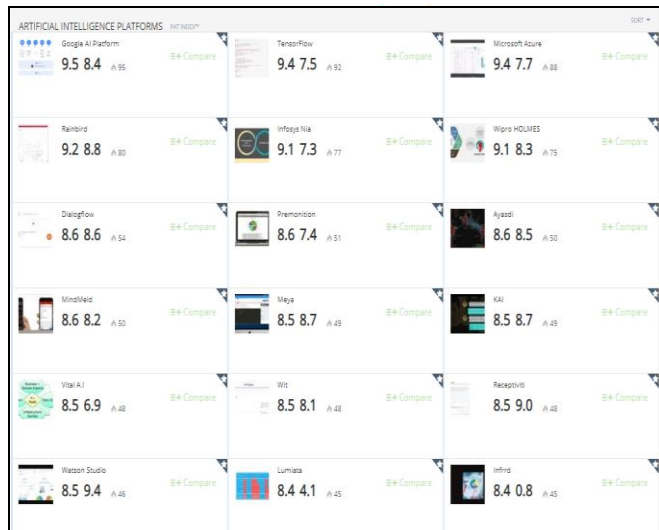

Figure 1. Artificial Intelligence – Development Platforms 2020.

We are intricate the inward activities of a calculation approach: Multinomial Naive Bayes. This is a great calculation for content arrangement and characteristic language handling. We start by bringing in our natural language toolbox. Further text classification are visualizes in Fig. 2.

```
import nltk
from nltk.stem.lancaster import LancasterStemmer
# word stemmer
stemmer = LancasterStemmer( )
```
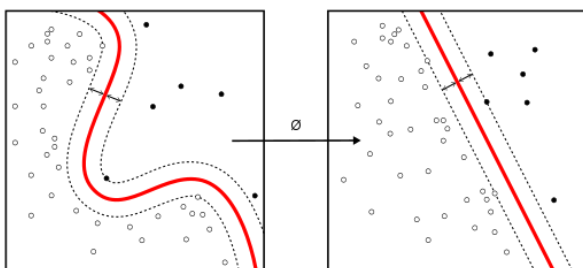

Figure 2. Text Classification using MNB.

We use natural language toolkit for two things:

a) Breaking up sentences into words (tokenization): "Corona not a disease" tokenizes to a list of individual words: "Corona", "not", "a", "disease"

b) Reducing words to their stem (stemming): "not" stems to "nt" which allows it to be matched with "not" (same stem).

Chatbots can be substance or voice-based, in our assessment we used emanam as voice reinforced one and psych-5 as substance and voice maintained one. Last bit of result joins the eventual outcome of both, and rely upon scripted responses including scarcely any affected patients. The change from "the customer learns the interface" to "the chatbot is acknowledging what the customer needs" connotes progressively conspicuous consequences or on boarding, benefit and getting ready inside the crisis facility and other workplace.

IV. HEALTH SYSTEM ANALYSIS

Assessments from the 2014-2015 Ebola scene recommend that the extended number of passing realized by measles, intestinal disorder, HIV/AIDS, and tuberculosis attributable to prosperity system dissatisfaction outperformed passing from Ebola [7].

A structure ability to keep up movement of essential prosperity organizations in information advancement organizations will depend upon its benchmark cutoff and weight of disease, and the COVID-19 transmission setting [8]. Keeping up people trust in the constraint of the prosperity structure to safely deliver essential issues and to control pollution risk in prosperity workplaces is basic to ensuring appropriate thought searching for lead and adherence to general prosperity direction [9]. Natural Language Processing Unit do the Intent Recognition based runtime and activate the Instant Massages from patients. Fig. 3. Mention the same process.
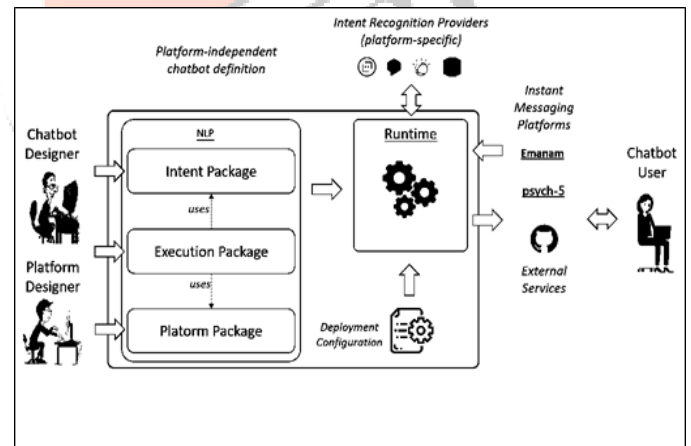

Figure 3. NLP supported AI based Chatbot architecture

A productive and orchestrated digitized prosperity system can keep up impartial access to major assistance movement all through an emergency, confining direct mortality and keeping up a key good ways from extended roaming mortality [10].
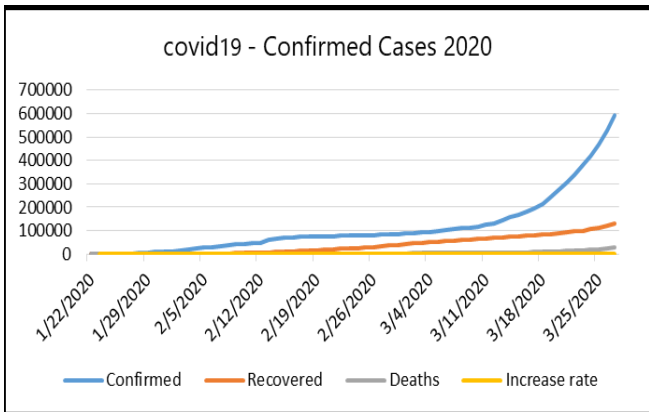
Figure 4. Comparison chart of Covid-19 confirmation

V. METHODOLOGY

Initial step of the our research, the issue of diagnosing fundamental emotional wellness of contaminated people was recognized and an Interview was held with a clinical therapist to distinguish the emotional wellness issues that happen all the more regularly among patients. At that point, perception was made on how the determinations were performed by the experts [14]. A model was assembled that utilizes Artificial Intelligence systems to analyze five basic psychological well-being issues viably Fig.4. This model helps the experts to distinguish the issue if the known confirmations of the patient are given as input.
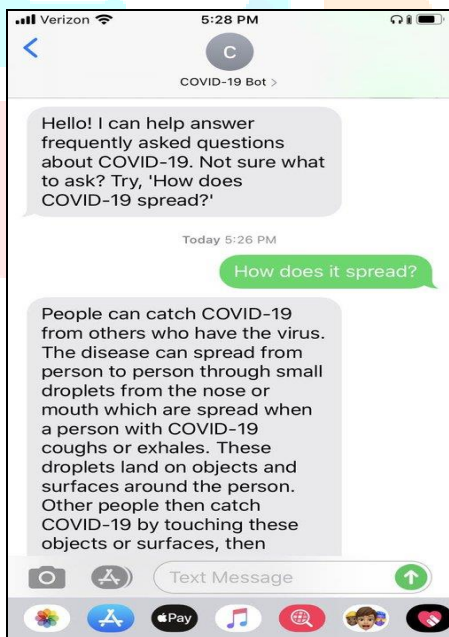

Figure 5. Coronavirus FAQ Chatbot

VI. IMPLEMENTATION DETAILS

The chatbot - Emanam and psych-5 are created with Autopilot, Twilio's Language Understanding packages. This permits individuals to pose inquiries in a wide range of ways and still find the correct solution to their inquiries [24].A similar bot can be sent on an assortment of correspondence channels past SMS, including voice, Facebook Messenger, and webchat [15]. The layout permits you to pick the channels that are generally pertinent to your crowd dependent on the network that you are serving Fig.5.

A. Coronavirus and Chatbot works

Attributes of bot can be refreshed in the Twilio Console by means of a simple to utilize User Interface [16]. Underneath, perceive how to include another example or model inquiry of how a client may get some information about the length of the ailment brought about by coronavirus Fig.6. Represented the client side interpretation.

```
Client :
npm install --save twilio-chat – Corona2019
const Chat = require('twilio-chat');
Chat.Client.create(token).then(client => {
});
--------------------------------------------------------------------------------
-------
final static String SERVER_TOKEN_URL = "https://covid-
19.twil.io/chat-token";
--------------------------------------------------------------------------------
-------
using Sunlight;
public class Sunlight : IAmAwesome {
Determines if <c cref="Sunlight">the Sunlight class</c> is awesome,
public void DetermineIfAwesome(Sunlight sunlight)  {
if (sunlight is Awesome)
{
this.WriteXml("<halp nested="absolutely">I'm  C19  tech</halp>");
} else {
throw new InvalidOperationException("Code should never be
reached");
}
}
}
```
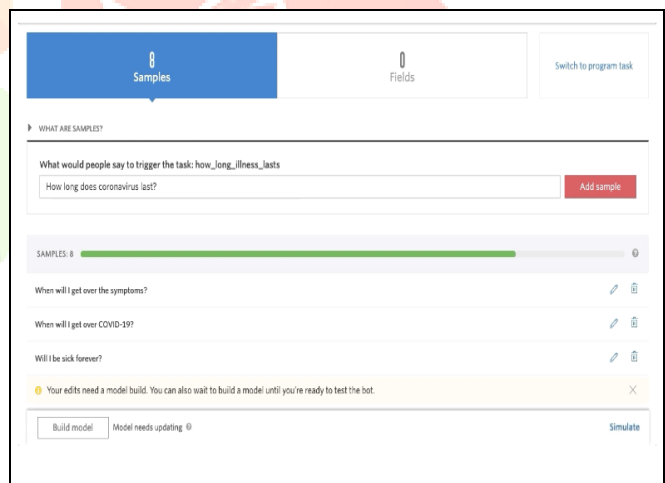
Figure 6. Chatbot design with twilio

Figure 7. Coronavirus – Chatbot design

B. Model Training Phase

Autopilot also has a full text simulator system in the Twilio Console that can be utilized to prepare bot [17]. Patients or client ask it inquiries, perceive how the bot reacts, at that point train it on the off chance that it reacts erroneously Fig.7. Mention the backend process with the support of MySQL open source database. Filtered data only stored on the
Database.

C. Applicable Stations

After custom fitted the bot's inquiries and answers to area, adjust the channels on which get and send messages [18]. Twilio's Autopilot stage works across channels, so a similar bot can undoubtedly take inquiries via telephone or an informing station like SMS or webchat visualized in Fig.8.
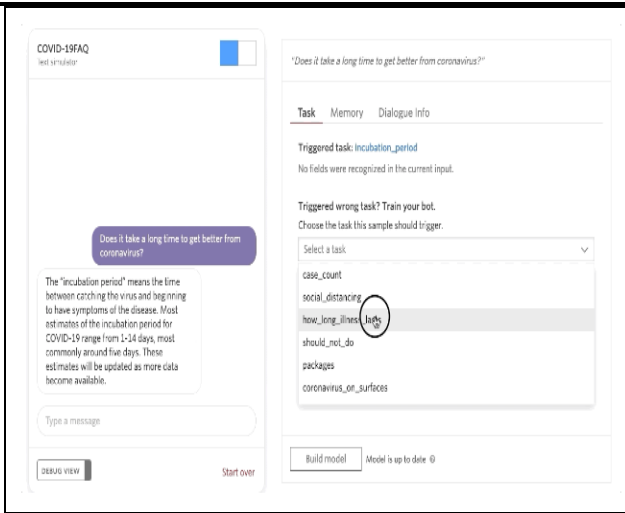
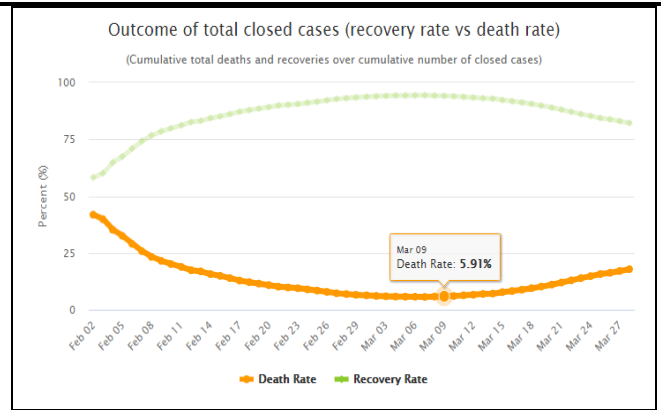Figure 8. Chatbot text simulation User Interface

Figure 9. Channel tuning for chatbot design

Utilizing Autopilot structure activities we can send SMS or other type of informing administrations, welcoming them to a Programmable Video space for further consultations [19][26].Multi Channel propagation and handling tools are depicted in Fig.9.

VII. EXPERIMENTAL RESULTS

The reason for this research paper is to give Artificial Intelligence based bot creation and ideas of AI calculations much of the time utilized in psychological wellness region and their genuine application models right now. The investigation of psychological wellness utilizing AI procedures is chiefly centered on the administered getting the hang of setting for orders [20].

End of our experiment , we found some of the activities improve your health that are make another day by day schedule that needs taking care of yourself Fig.10. People could take a stab at understanding more or watching motion pictures, having an activity normal, attempting new unwinding procedures , or finding new information on the web [21][25].

Figure 10. Covit-19 recovery rate analysis chart

Attempt and rest and view this as another if irregular experience, that may have its advantages Fig.11.
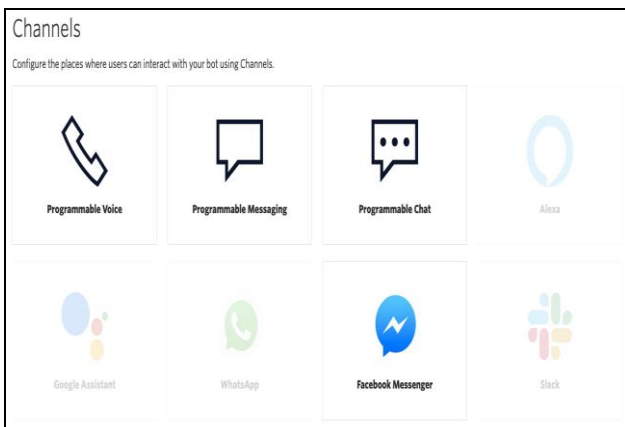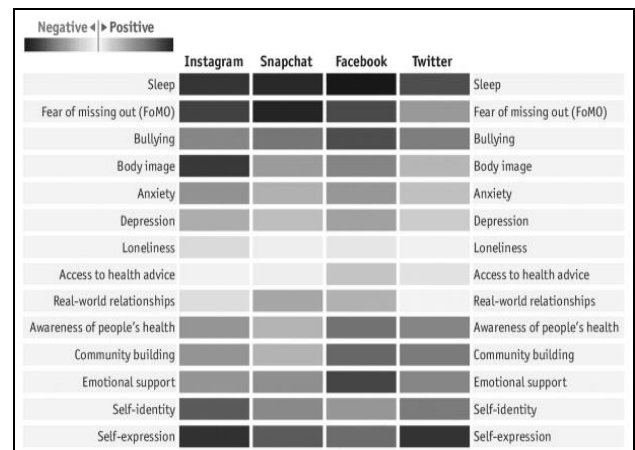

Figure 11. Other depressive channel for mental illness

We checked on covid-19 infection as areas where AI methods were utilized in emotional wellness [22][23], and Multinomial Naive Bayes, Random Forest, Naive Bayes have been applied in these spaces are in Fig.12.
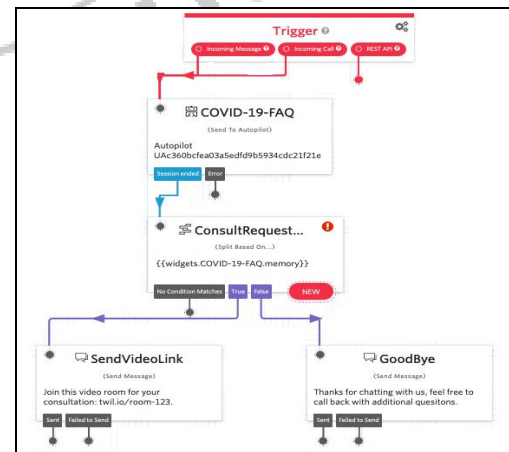

Figure 12. Channel Communication in chatbot

VIII. CONCLUSION

The coronavirus can fundamentally influence psychological wellness for everybody, except particularly for those with dysfunctional behavior. Both the nervousness of getting the illness just as the expansion in depression and seclusion can intensify and trigger side effects. Recognizing, perceiving and following up on mental misery in these questionable occasions is critical to reducing the effect. March 19, a 23-year-old

suspected of being infected with the novel corona virus died after he jumped off the seventh floor of Hospital. The family grumbled that the specialists didn't guide the man who had quite recently come back from Sydney with his mom. Quiet stretched around 9 pm and was taken to the seventh floor for confirmation and assessment. At the point when specialists arrived at the room, he wasn't inside. Simultaneously, another specialist watched a body around 9.15 pm. notwithstanding, the research we have analyzed show a few impediments on covid-19. As can be seen from the above mentioned, a few investigations utilized a little size of messages, under 10 characters, to manufacture their classifier through AI systems. The precision of their classifier assessed on the examples may not be summed up since a little example isn't anything but difficult to speak to the whole populace. This might be unavoidable restrictions because of limited assets in real world clinical/demonstrative settings. All things considered, scientists by and by should know about the way that AI itself can't resolve this issue. As audited over, our methodology has its own quality and shortcoming, and its presentation relies upon the motivation behind investigations and properties of information. Additionally, by and large AI calculations are influenced a great deal by human preprocessing, for example, hyper parameter tuning of models and information handling for models to be fitted into optimality. Analysts may dissect their information utilizing a few sorts of various classifiers, for example, SVM, RF and Naive Bayes and pick the calculation with the most elevated precision.

ACKNOWLEDGMENT

REFERENCES

[1] World Health Organization (2020) COVID-19, preparedness & response RCCE ACTION PLAN GUIDANCE by IFRC UNICEF. https://www.preventionweb.net/go/71026.

[2] World Health Organization (2020) Operational considerations for managing, COVID-19 cases or outbreaks on board ships - Interim guidance 25 March 2020 - World Health Organization 2020. https://www.who.int/publications-detail/operational-considerations-for-managing-covid-19-cases-outbreak-on-board-ships.

[3] Michael Washington (2016) "An Introduction to the Microsoft Bot Framework: Create Facebook and Skype Chatbots using Microsoft Visual Studio and C#", 1st Edition. https://ua.b-ok2.org/book/3380735/f9c511

[4] Amit Kothari, Rania Zyane, Joshua Hoover (2017) "Chatbots for e-commerce: Learn how to build a virtual shopping assistant, Bleeding Edge Press". https://www.oreilly.com/library/view/chatbots-for-ecommerce/9781939902481

[5] Srini Janarthanam (2017), "Hands-On Chatbots and Conversational UI Development: Build chatbots and voice user interfaces with Chatfuel, Dialog flow, Microsoft Bot Framework, Twilio, and Alexa Skills".

[6] Wang C, Horby PW, Hayden FG, Gao GF (2020). "A novel coronavirus outbreak of global health concern". Lancet; published online Jan 24. https://doi.org/10·1016/ S0140–6736(20)30185–9.

[7] Wang X (2020). "Coronavirus outbreak: 444 new cases added on Friday. Jan 25. China Daily". http://www.chinadaily.com.cn/a/ 202001/25.WS5e2bad63a310128217273336.html (accessed Jan 25, 2020).

[8] Chan JFW, Yuan S, Kok KH, et al (2019). "A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster". Lancet 2020; published online Jan 24. https://doi.org/10·1016/S0140–6736(20)30154–9.

[9] National Health Commission of China. "Principles for emergency psychological crisis intervention for the new coronavirus pneumonia" http://www.nhc.gov.cn/jkj/s3577/202001/6adc08b966594253b2b791be5c3b9467.shtml (accessed Jan 26, 2020).

[10] Jennifer Bouey (2019), "Early Introduction of SARS-CoV-2 into Europe Identifying Locations with Imported SARS-CoV-2 Rhabdomyolysis as Potential Late Complication Associated with COVID-19".

[11] David D.Luxton (2016), "Artificial Intelligence in Behavioral and Mental Health Care", Pages 1-26

[12] Simon D'Alfonso (2017), "Artificial Intelligence-Assisted Online Social Therapy for Youth Mental Health".

[13] Loxton, David D. (2014), "Artificial intelligence in psychological practice: Current and future applications and implications". Professional Psychology: Research and Practice, Vol 45(5), Oct 2014, 332-339. //new.siemens.com/global/en/company/stories/home.html.

[14] Diligenti M, Coetzee F M,Lawrence S et al. Focused crawling using context graphs. In:proc of the international conference on very large database (VLDB). 2000.

[15] Ching-Chi Hsu, Fan Wu. Combining text and link analysis for focused crawling-an application for vertical search engines. Elsevier: Information systems, 2006.

[16] Ntoulas, P. Zerfos, and J. Cho. "Downloading hidden Web content". Technical report, UCLA, 2004. http://citeseer.ist.psu.edu/ntoulas04downloading.html

[17] S. Pandey and C. Olston. "User-centric Web crawling". In WWW Conference, 2005. http://citeseer.ist.psu.edu/720284.html.

[18] T. Tsikrika, G. Kalpakis, S. Vrochidis, I. Kompatsiaris, I.Paraskakis, I. Kavasidis, J. Middleton, and U. Williamson, "A Framework for the Discovery, Analysis, and Retrieval of Multimedia Homemade Explosives Information on the Web," 10th International Conference on Availability, Reliability and Security (ARES 2015), Aug 2015, pp. 601-610, doi:10.1109/ARES.2015.86.

[19] G. Kalpakis, T. Tsikrika, C. Iliou, T. Mironidis, S. Vrochidis, J.Middleton, U. Williamson, and I. Kompatsiaris, "Interactive Discovery and Retrieval of Web Resources Containing Home Made Explosive Recipes", 18th International Conference on Human-Computer Interaction (HCI 2016), in press.

[20] D. Cai, S. Yu, J.-R. Wen, and W.-Y. Ma, "Block based web search," in Proceedings of the 27th annual international ACM SIGIR conference on Research and development in information retrieval. ACM, 2004, pp.456–463.

[21] L. Bing, R. Guo, W. Lam, Z.-Y. Niu, and H. Wang, "Web page segmentation with structured prediction and its application in web page classification," in Proceedings of the 37th international ACM SIGIR conference on Research & development in information retrieval. ACM, 2014, pp. 767–776.

[22] D. Koschtzki and F. Schreiber. Centrality analysis methods for biological networks and their application to gene regulatory networks. Gene Regulation and Systems Biology, 2(2):193–201, 2008.

[23] G. Lewison and P. Roe. The evaluation of Indian cancer research,1990-2010. Scientometrics, 93(1):167–181, 2012.

[24] N. Ailon, M. Charikar, and A. Newman, "Aggregating inconsistent information: ranking and clustering," Journal of the ACM (JACM), vol. 55, no. 5, p. 23, 2008.

[25] M. Charikar, V. Guruswami, and A. Wirth, "Clustering with qualitative information," in Proceedings of the 44th Annual IEEE Symposium on Foundations of Computer Science, ser. FOCS '03. Washington, DC, USA: IEEE Computer Society, 2003, pp. 524–. [Online]. Available:http://dl.acm.org/citation.cfm?id=946243.946306.

[26] D. Zhou, J. Huang, and B. Sch¨olkopf, "Learning with hypergraphs: Clustering, classification, and embedding," in Advances in neural information processing systems, 2006, pp. 1601–1608.

AUTHORS PROFILE

Anjit raja. R has a master's degree in Computer Applications from the Anna University-Tiruchirappalli. Pursuing doctoral research at Anna University, Chennai. His master and Ph.D. thesis about psychological characteristics of adolescent's involvements in self-harming and suicides.

He has also been involved in the Adult pupil's suicide prevention research project about domestic humankinds. He is also a member of Computer Society of India.

Dr.B.Nagarajan working as a professor of KPR Institute of engineering and technology at Anna University affiliation. He guided number of Ph.D. Scholars and received many project grands from domestic funding agencies – Government of India.

His research focuses on pattern mining and image processing.