"REVIEW ON: VIRTUAL ASSISTANT IN MENTAL HEALTH"

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Abstract: The aim of this review was to explore the current evidence for conversational agents or chatbots in the field of psychiatry and their role in screening, diagnosis and treatment of mental illnesses. Technologies like Artificial intelligence, data science and machine learning are getting upgraded. The advancement in available, portable, low cost handheld device like mobile phones and availability of network connection has resulted in the user's mobility at an unprecedented level. We evaluate different methodologies like state phase annotation, smart goal annotation, collection process, agreement results as well as annotation skills for achieving the health goals. The user has to give their health regarding queries based on that virtual assistant suggest appropriate solution. The facilities like report generation as well as scheduling assignment are provided. It will increase the interaction between humans and machines with the help of different technologies, vast dialogue ,conversational knowledge based, general knowledge based. The system using different algorithms for disease recognition, behavior abnormality detection, prediction etc. Experimental result shows that: Compared with traditional methods, the proposed method is more accurate and faster also
User can get service anywhere and anytime.

Keywords: CHATBOT, MENTAL HEALTH

I. INTRODUCTION

health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community. Mental health is a basic human right. And it is crucial to personal, community and socio-economic development. Mental health is experienced differently from one person to another, which is in varying degrees. Access to mental health services and clinical psychologist are the main issues in many countries. According to the Health Canada Editorial Board on Mental Illness in Canada, more than 20% of the Canadians will suffer from a mental illness during their lifetime, and the global economic burden of mental health in 2010 was estimated as 2.5 trillion US dollars (6).

The need for new solutions ended up in chat bots or the conversational agents. These conversational agents are either hardware Eg : Alexa or software Eg :Google assistant, Siri .The technology of chatbot is available on smartphones and smart home devices owned by millions around the world, They also incorporate natural language processing. These chat bots can also used for the treatment of those who are not willing to disclose about them to a human being.
In this paper, we focus on the 'future therapist', the virtual assistance in mental health.

II. IMPORTANCE OF MENTAL HEALTH

Mental health includes our psychological, emotional and social well-being. It affects how we feel, think and act. It also helps determine how we handle stress, relate to others, and make healthy choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood.

Mental and physical health are equally important components of overall health. For example, depression increases the risk for many types of physical health problems, particularly long-lasting conditions like diabetes , heart disease ,and stroke. Similarly, the presence of chronic conditions can increase the risk for mental illness.

Nowadays, stress levels have significantly increased due to health factors, work-related stress, family problems and other personal issues; life is not the same as it used to be before. Positive mental health is essential when we have to make difficult decisions, deal with stressful situations, and interact with others around us; it plays a significant role in our overall health. Therefore, we must learn more about this illness to keep it at bay and spread mental health awareness.

III.   LITERATURE REVIEW

[1]**Clinical Advice by Voice Assistants on Postpartum Depression:** Cross-Sectional Investigation Using Apple Siri, Amazon Alexa, Google Assistant, and Microsoft Cortana by Samuel Yang , Jennifer Lee, Emre Sezgin ,Jeffrey Bridge, Simon Lin.

Methodology: Four virtual assistance installed in two devices ,and gave verbal responses and clinically appropriate advice which assessed by physicians.
Results: Verbal responses is about 79%.
Clinically appropriate responses is about 30%..

[2]**Voice Assistant-Based CBT for Depression in Students:** Effects of Empathy-Driven Dialog Management by Marie Gotthardt, Julian Striegl ,Claudia Loitsch ,Gerhard Weber.

Methodology : Usage of chatbots to provide tools based in cognitive behavioral therapy.
Conclusion : High usability and acceptance among students with depression

[3]**Developing a Mental Health Virtual Assistance (Chatbot) for Healthcare Workers and their Families**
The authors of the paper are Jasmine M. Noble, Ali Zamani, MohamadAli Gharaat, Dylan Merrick, Nathanial Maeda, Alex Foster, Isabella Nikolaidis, Rachel Goud, Eleni Stroulia, Vincent Agyapong, Andrew J. Greenshaw, Simon Lambert, Dave Gallson, Ken Porter, Deb Turner, Osmar Zaiane.

Methodology: . The software features four major rudiments the Mira Chatbot, Mira Resource Portal, Mira Dataset, and Mira Interface. Mira Chatbot's primary purpose is to give strategic resources for users responding to the custom needs that they partake. Users give their unique information through two main tasks defined within the Mira Chatbot intent discovery and entity discovery .

Results: Mira Chatbot has an chat experience with an accuracy rate of 99.1%.and it recognizes important keywords from a sentence with an accuracy rate of 95.4%.

Future scope: chatbot has is being limited in response length or for producing general or indistinctive versus compassionate or emotionally intelligent responses.

[4]**Siddhant Rai, Akshayanand Raut, Akash Savaliya, Dr. Radha Shankarmani "Darwin: Convolutional Neural Network based Intelligent Health Assistant", 2018, IEEE**

Methodology: This system uses Artificial Intelligence (AI), Artificial Neural Network(ANN) and Deep Learning. b. Findings and Application: Health care assistant will allow users to check for symptoms of common diseases, a suggestion to visit a doctor if needed, exercise recommendation, tracking exercise/workout routine, along with a comprehensive exercise guide.

Remark (Future scope and Conclusion): Propose system focuses on human-computer interaction. It is self adapting based on user's past interaction
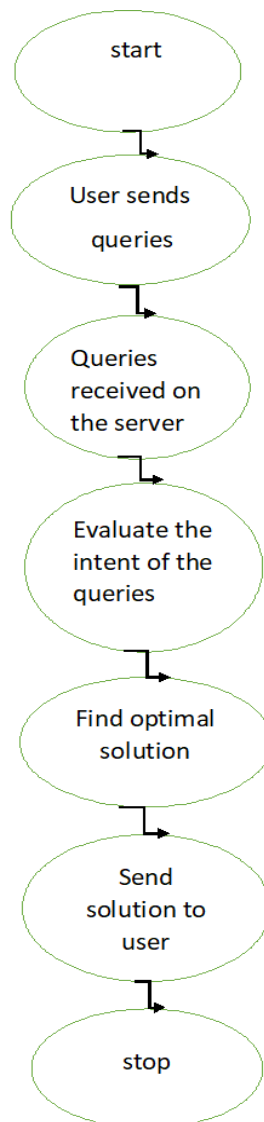
[5] **Li Chengwei1, Zhang Limei, Hu Xiaoming "The Study on Virtual Medical Instrument Based on Lab View", 2005, IEEE:**

Methodology: This system used Data science for analysis of data and NLP is used for processing of data. b. Findings and Application: Signal acquisition, processing and analysis system using lab-view.

Remark (Future scope and Conclusion):Virtual medical instrument such as PC based system can be an efficient alternative to standalone medical instrument and as the speed and reliability of the PC increases, there will be more of virtual medical instrument systems available

System flow

```
start
  ↓
User sends queries
  ↓
Queries received on the server
  ↓
Evaluate the intent of the queries
  ↓
Find optimal solution
  ↓
Send solution to user
  ↓
stop
```

IV.   CONCLUSION

The number of cases in mental health issues and the subsequent death are increasing day by day . This is mainly due to lack of efficient facilities and high cost. This is even worse in people living in remote areas. Even though chatbots are arising in the field of physical health it is not popular in assisting mental health. If the chatbots are performed impact fully and ethically , this could be a powerful tool in the field of psychiatry and there could arrive a day where this chatbots are used widely among the people for solving issues related to mental health.By providing smart and personalised health information the scope can be improved.

Scope of the paper includes:

1) This provides evidence based solutions to meet current demands .
2)enhance client trust in e-mental health care .
3)Helping users to improve their physical and mental lifestyle .
4) Connecting user with professionals.
5) Keeping track of mental health conditions.
6) Advancement in voice recognition helps in hands free documentation in medical procedures.
7) Access to big data so as the access to history of the patient can be easily accessible.
In conclusion, the aim of the project is to provide an end to end solution for the diagnosis and effective treatment of mental illness.

REFERENCES

[1]. Voice Assistant-Based CBT for Depression in Students**:** Effects of Empathy-Driven Dialog Management by Marie Gotthardt, Julian Striegl ,Claudia Loitsch ,Gerhard Weber.

[2]. Clinical Advice by Voice Assistants on Postpartum Depression: Cross-Sectional Investigation Using Apple Siri, Amazon Alexa, Google Assistant, and Microsoft Cortana by Samuel Yang , Jennifer Lee, Emre Sezgin ,Jeffrey Bridge, Simon Lin.

[3]. Developing a Mental Health Virtual Assistance(Chatbot) for Healthcare Workers and their FamiliesbyAli Zamani.

[4]. Siddhant Rai, Akshayanand Raut, Akash Savaliya, Dr. Radha Shankarmani "Darwin: Convolutional Neural Network based Intelligent Health Assistant", 2018, IEEE a.

[5]. Li Chengwei1, Zhang Limei, Hu Xiaoming "The Study on Virtual Medical Instrument Based on Lab View", 2005, IEEE:

[6]. TRAUTMAN S,Rehm j,wittchen H.the enconomic cost of mental disorders .Embo rep.2016 :17(9)J:1245-1249

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