

Study of Role of Artificial Intelligence and its Implementation in Fast Recovery in Mental Illness

Aditya Bhosale, Nikita Bhole, Prof. Vaishali Bhoite*

Department of Computer Science , Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar,
Pune-05 (Affiliated to Savitribai Phule Pune University), Pune, Maharashtra, India

ABSTRACT

A new area under research is being explored where Artificial Intelligence (AI) and Machine learning can better help in detection, diagnosis and treatment of mental illness. Artificial Intelligence technology is helping in medicine for physical health from last decade or even more than that. Researchers are trying to find the way where in AI will be of great help in the discipline of mental health. Mobile apps, AI and Machine learning programs have potential to help to continuously observe the mental status of patients and would be better to treat patients on time. Sometimes saving the life of patients. The whole world is facing COVID situation since one year and many mental health problems raised because of this situation.

AI can be thought as a great help in fast recovery of such patients. Artificial intelligence has the potential to reshape how we diagnose and understand mental health. Using AI techniques and tools better solutions in mental health problems which are commonly reported can be developed. Psychiatrists and Counselors will be beneficiaries of these tools and techniques.

Recent study in this field has focused on main point that Government has very less data for such patients, although number of such patients are increasing.

Keywords: Artificial Intelligence, Mental Health, Mental illness, AI techniques and tools, Psychological problems

I. INTRODUCTION

A. About mental illness and Mental Health

Mental illness can be thought of as health problems which involve -

- Significant emotional and behavioral changes.
- Social, professional, or family activities are slowed.
- Relationships Problems.

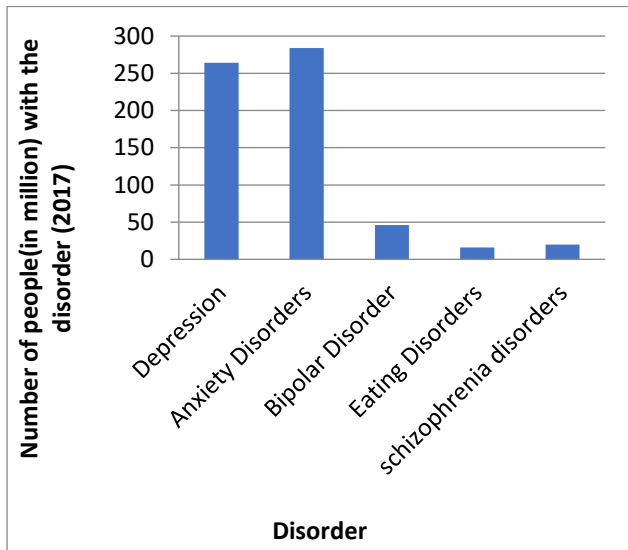
- Adaptable to change and adversity.

Mental health includes day-to-day activities functioning effectively and properly.

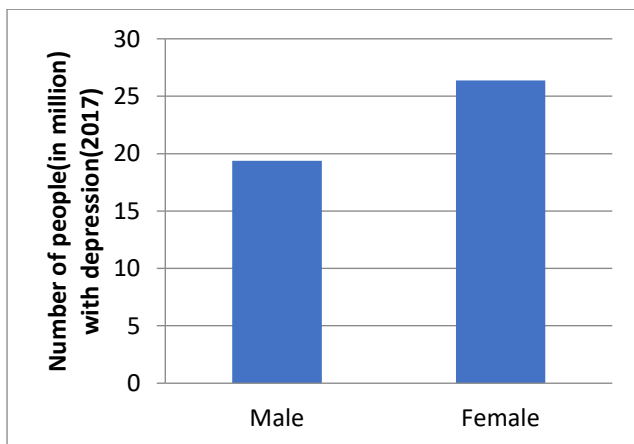
B. Mental health problems that are commonly reported

The most commonly reported types of mental health issues are

- Anxiety disorders
- Mood disorders
- Schizophrenia disorders



Mental Health Global Population Statistics [10]



Depression Statistics (India) [10]

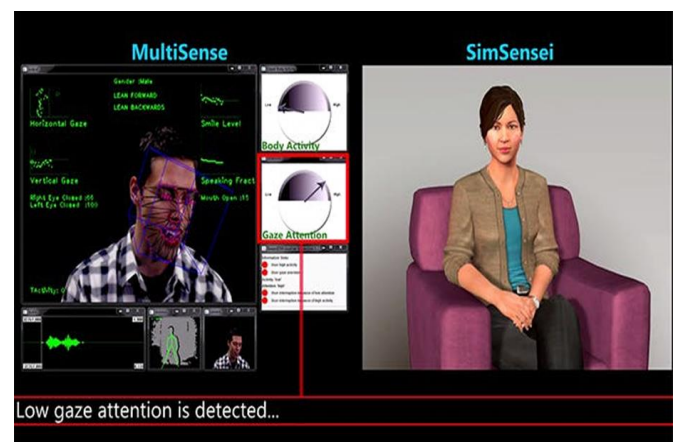
C. An appeal of AI in mental health

The International Committee of the NGO noted in its 2017 report that while utilizing Chatbots and AI apps in health care results with mixed report. AI tools, Apps and robots which are sometimes expensive are

using predefined script and do not have their own understanding and they follow a pre-defined script. Therefore, sometimes they are not always ready to understand the user and his or her intent. Therefore, some experts suggest that this medium should be utilized in collaboration with a person's therapist to confirm that no information should be mixed.

A virtual therapist called Ellie designed to treat people with depression and veterans with post-traumatic stress disorder (PTSD) was also launched and tested by the Institute of Creative Technologies (ICT) at the University of Southern California. Ellie functions through a Trojan horse using different algorithms to work out her questions and motions. Patient is observed through a webcam and microphone which allow her to watch the patient and provides her feedback and decides when to ask certain questions to patients.

Kinect sensor therapy is useful to cure mental illness. The Kinect sensor therapy shows the patient's body posture, head nodes, eye movements etc. on the screen.



[6]

II. ARTIFICIAL INTELLIGENCE BENEFITS IN DEALING WITH THE MENTAL HEALTH CRISIS

AI can be viewed as a powerful tool to help in dealing with mental health

1. Support mental health workers

AI can help professionals in their work. Algorithms can analyze data and can rapidly than humans, suggest possible treatments, by monitoring patient's progress and alert the human professional of any concerns.

2. 24/7 access

Due to a shortage of human mental health professionals, it can take months for an appointment to be made. If patients live in a region where there are not enough mental health professionals, the wait will be even longer. AI provides a tool that an individual can access 24 hours a day, 7 days a week, without waiting for an appointment.

3. Not expensive

The cost of care prevents certain individuals from seeking assistance. Artificial smart tools could be a more accessible option.

4. Comfort talking to a bot

Even though it may take time for some people to feel comfortable speaking to a robot, the anonymity of an AI algorithm can be positive. What might be hard to share with a face-to-face therapist is easier for some to reveal to a robot.

III. TREATMENT MADE EASY USING AI

There are several potential benefits to using AI to help manage depression, starting with better access to coordinated care. Technology can help in Cognitive Behavioral Therapy which is very effective in mental disorders.

1. Convenience

The ability to access mental state resources that are convenient and low cost are major benefits of apps and programs created with AI. Most psychological state apps and platforms available provide resources users can access anywhere from a smartphone, tablet, or laptop. They're also available at any time. You'll be able to use the apps day or night, on weekends, holidays, or the other time that works for your schedule.

Compared to the cost of therapy fees, as well as taking into account missed work, travel and other needs, these applications are also inexpensive or free alternatives.

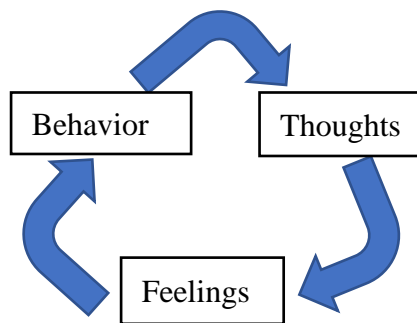
2. Connection

AI can connect people to the assistance they have in situations where they otherwise wouldn't have access. In rural and remote areas, psychological state resources are often few and much between. Furthermore, the available resources might not have the capacity to fulfill the stress of the full community. The ability to access and use mental state resources that are designed using computing may be a lifeline of hope for people in areas where there's little to no affordable, accessible, and available help.

3. Anonymity

The ability to keep up one's privacy when discussing psychological state as well as the pliability to try to do so when it's convenient and from one's own space makes these AI-designed applications for attractive and possibly useful in depression.

IV. AI BOTS AND APPLICATIONS IN DEPRESSION: DIAGNOSTIC TOOLS



Cognitive Behavioral Therapy (CBT) Model: [9]

Here are some examples of popular AI-based tools which are available to help people deal with depression. While applications cannot diagnose or treat a mental health problem, they can be complementary to individuals working with a physician or mental health professional.

1. WoeBot

WoeBot launched in the summer of 2017 and is cited as an automated conversational agent, also called a chatbot.

2. Wysa

Wysa is a man-made intelligence-based, "emotionally intelligent" bot that the corporate says can "help you manage your emotions and thoughts."

Like WoeBot, Wysa's designed supported principles of CBT to assist users challenge and alter thoughts and behaviors. Wysa also integrates dialectic behavioral therapy (DBT), meditation practices and motivational interviewing into chats.

3. Tess

Tess of X2AI is described as "a psychological artificial intelligence that administers highly personalize psycho educational and health recalls on demand."

4. Youper

This is free app for IOS and Android which uses AI chatbot technology to assist users to talk about their symptoms, behaviors, and thought patterns. The corporate call. Youper as an "emotional health assistant," which gives personalized feedback and insights.

V. LIMITATIONS

With the help of Applications (Mobile Apps) and programs which uses AI technique, faster and timely help can be given to people facing mental depression and at least risk is minimized to some extent. Also, it will help to greater extent to Psychiatrist and Counselors.

According to a survey conducted of quite 700 psychiatrists, most of them believe that AI techniques will be most beneficial in their clinical practice and can become most useful in documentation. Many of them were not convinced for usage of those technologies because they think that the use of these technologies is having risks in keeping privacy of patients facing mental illness. Knowledge engineers will have to train doctors and counselors for how to use the mentioned applications and should agree for usage of it.

VI. FUTURE SCOPE: CHALLENGES THAT MUST BE OVERCOMED

Although AI techniques are assisting a lot in addressing the mental state crisis, more and more challenges are coming forward in this area maintaining privacy of data of people facing such problems is a major concern while using technology. Some standard regulations must be set for these applications, Psychological professionals will play key role in development of AI techniques. Expert systems can be developed by knowledge Engineers where Psychiatrist and Counselors will be experts where

these experts will explore the ways of treating Mental Health and Mental illness. Machine Learning algorithms can be thought of for more better results.

VII. CONCLUSION

Using AI and Machine Learning techniques, researchers and various companies are doing continuous efforts in finding ways that will help to detect, diagnose and to find treatment for mental illness and predict depression. Also they are studying and analyzing how to use technology to explore how facial expressions, change in tone and language of words could indicate a risk of suicide and to save precious human life. Implementing these technologies to reach to people facing mental health problems and would be of great help for them to live happier life is a great challenge. Also it can save many lives trying to commit suicide because by getting timely help using AI techniques.

VIII. REFERENCES

- [1]. <https://www.medicalnewstoday.com/articles/154543#risk-factors>
- [2]. https://escholarship.org/content/qt9gx593b0/qt9gx593b0_noSplash_d814b6b41c76cb874050695d2bf30ced.pdf
- [3]. <https://www.forbes.com/sites/bernardmarr/2019/05/03/the-incredible-ways-artificial-intelligence-is-now-used-in-mental-health/?sh=250696b8d02e>
- [4]. <https://www.verywellmind.com/can-artificial-intelligence-help-depression-4158330>
- [5]. <https://www.verywellhealth.com/using-artificial-intelligence-for-mental-health-4144239>
- [6]. <https://futurism.com/uscs-new-ai-ellie-has-more-success-than-actual-therapists>
- [7]. <https://www.sciencedirect.com/book/9780124202481/artificial-intelligence-in-behavioral-and-mental-health-care>
- [8]. https://www.researchgate.net/publication/330051837_Technology_and_mental_health_The_role_of_artificial_intelligence
- [9]. <https://www.simplypsychology.org/cognitive-therapy.html>
- [10]. <https://ourworldindata.org/mental-health>