

A Comprehensive Study on Artificial Intelligence's Impact on Mental Health Treatments

¹Katari Balakrishna, ²Soma Lakshmaiah & ³M. Naga Seshudu

^{1,2}Assistant Professor, Annamacharya Institute of Technology and Sciences, Kadapa.

³Assistant Professor (Ad-hoc), JNTUA College of Engineering, Pulivendula.

ABSTRACT:

An enthusiasm for artificial intelligence (AI) as a clinical guide stemmed as research on mental health and psychology expanded. However in spite of bombing the Turing Test, AI keeps on being utilized as a handy guide in the mental network. From computer generated reality reproductions of regular exercises to mechanical pet seals actualized in nursing homes, AI has discovered a home in the mental field as a help for those in the clinical field just as those dealing with friends and family. Right now, intend to take a gander at the phases of the Turing Test, how those are identified with tidbit and non-tidbit questions and how current uses of AI are utilized in mental health medications.

KEYWORDS *Artificial Intelligence, Mental Health, Therapy, Psychology, Robots*

I. INTRODUCTION

In software engineering, artificial intelligence (AI), some of the time called machine intelligence, will be intelligence exhibited by machines, as opposed to the normal intelligence showed by people and creatures. Driving AI course books characterize the field as the investigation of "insightful specialists": any gadget that sees its condition and takes activities that boost its risk of effectively accomplishing its goals.[1] Colloquially, the expression "artificial intelligence" is frequently used to depict machines (or PCs) that imitate "psychological" capacities that people partner

with the human brain, for example, "learning" and "issue solving".[2]

As machines become progressively proficient, errands considered to require "intelligence" are regularly expelled from the meaning of AI, a marvel known as the AI effect.[3] A jest in Tesler's Theorem says "artificial intelligence is whatever hasn't been done yet." [4] For example, optical character acknowledgment is every now and again barred from things viewed as AI[5], having become a routine technology.[6] Modern machine abilities by and large delegated AI incorporate effectively understanding human speech,[7] contending at the most significant level in vital game frameworks, (for example,

chess and Go),[8] self-rulingly working vehicles, clever steering in content conveyance systems, and military reenactments.



Artificial intelligence was established as a scholastic control in 1955, and in the years since has encountered a few floods of optimism,[9][10] followed by dissatisfaction and the loss of subsidizing (known as a "simulated intelligence winter"),[11][12] followed by new methodologies, achievement, and recharged funding.[10][13] For a large portion of its history, AI inquire about has been separated into subfields that regularly neglect to speak with each other.[14] These sub-fields depend on specialized contemplations, for example, specific objectives (for example "apply autonomy" or "machine learning"),[15] the utilization of specific instruments ("rationale" or artificial neural systems), or profound philosophical differences.[16][17][18] Subfields have

additionally been founded on social components (specific foundations or crafted by specific researchers).[14]

The customary issues (or objectives) of AI look into incorporate thinking, information portrayal, arranging, learning, characteristic language handling, observation and the capacity to move and control objects.[15] General intelligence is among the field's long haul goals.[19] Approaches incorporate factual techniques, computational intelligence, and conventional representative AI. Numerous apparatuses are utilized in AI, including forms of search and numerical enhancement, artificial neural systems, and techniques dependent on measurements, likelihood and financial matters. The AI field draws upon software engineering, data designing, science, psychology, etymology, theory, and numerous different fields.

The field was established on the supposition that human intelligence "can be so accurately portrayed that a machine can be made to reenact it".[20] This raises philosophical contentions about the idea of the brain and the morals of making artificial creatures enriched with human-like intelligence. These issues have been investigated by fantasy, fiction, and theory since antiquity.[21] Some individuals additionally believe AI to be a threat to

mankind in the event that it advances unabated.[22][23] Others accept that AI, in contrast to past innovative transformations, will make a danger of mass unemployment.[24]

In the twenty-first century, AI procedures have encountered a resurgence following simultaneous advances in PC power, a lot of information, and hypothetical comprehension; and AI methods have become a fundamental piece of the innovation business, assisting with taking care of many testing issues in software engineering, programming designing, and activities research.[25][13]

The principal utilization of AI in the mental field was the formation of ELIZA, a human-PC interface that reproduced a Carl Rogers-like psychotherapist [6]. ELIZA just gave figured reactions, copying a discussion.

Soon after, PARRY was made by therapist Kenneth M. Colby [6]. The PC program reproduced a patient experiencing neurotic schizophrenia and held discussions, as ELIZA, with its clients. Repel turned out to be so practical, master therapists made some hard memories separating PARRY from genuine patients. Repel has been the nearest AI framework to breeze through the Turing Assessment.

Mental health is the degree of mental prosperity or a nonappearance of mental disease. It is the condition of somebody who is "working at a good degree of passionate and social adjustment".[1] From the points of view of positive psychology or of comprehensive quality, mental health may incorporate a person's capacity to appreciate life and to make a harmony between life exercises and endeavors to accomplish mental resilience.[2] According to the World Health Organization (WHO), mental health incorporates "abstract prosperity, saw self-viability, self-governance, capability, between generational reliance, and self-completion of one's scholarly and enthusiastic potential, among others".[3] The WHO further expresses that the prosperity of an individual is included in the acknowledgment of their capacities, adapting to ordinary worries of life, gainful work, and commitment to their community.[4] Cultural contrasts, emotional appraisals, and seeking proficient speculations all influence how one characterizes "mental health".[3][5]

Mental health and mental sickness



As per the U.K. Specialist Journal (1999), mental health is the effective execution of the mental capacity, bringing about profitable exercises, satisfying associations with others, and giving the capacity to adjust to change and adapt to difficulty. The term mental sickness alludes all things considered to all diagnosable mental issue—health conditions portrayed by adjustments in speculation, state of mind, or conduct related with trouble or debilitated functioning.[6][7] Mental health and mental disease are two ceaseless ideas. Individuals with ideal mental health can likewise have a mental ailment, and individuals who have no mental sickness can likewise have poor mental health.[8]

Mental health issues may emerge because of stress, forlornness, melancholy, uneasiness, relationship issues, passing of a friend or family member, self-destructive musings, pain, compulsion, ADHD, self-hurt, different disposition issue, or other mental ailments of fluctuating degrees, just as learning disabilities.[9][10] Therapists, specialists, analysts, social laborers, nurture experts, or family doctors can help oversee mental sickness with medicines, for example, therapy, advising, or prescription.

Phases OF THE TURING TEST

The Turing Test made a reason for AI frameworks. To arrive at a charming state, AI

must accomplish and outperform the Turing test: three intelligence stages therapists and savants decided will make AI indistinct to people.

Intelligence Quotient, or IQ, is an investigation of human intelligence through government sanctioned testing [4]. Specialists in China conceived an intelligence model that they have named the "standard intelligence model" [5]; this tried the two people and AI frameworks of angles that associate artificial intelligence and human qualities. Four viewpoints were tried: input, yield, authority, and creation. The test was directed to various AI frameworks and human subjects. In 2014, the outcomes found that Google's AI framework was the main usually perceived AI framework on the rundown, positioning fourth and given an IQ score of 26.5 [5]. At the point when the AI frameworks were tried again in 2016, Google was again in fourth spot with a score of 47.28. Bing's AI framework came in eighth spot with a 31.98 score [5]. From this, AI demonstrated that it passed the IQ bit of the Turing Test.

Passionate intelligence, another angle, collects the capacities to communicate and control emotions[4]. Simulated intelligence frameworks must show in associations, it can emit and control their own feelings. The AI framework must have the option to manage

sentiments and how it is seen by passing judgment on a given circumstance [4].

The third angle is a genuinely new philosophical thought, otherworldly intelligence. The capacity to arrive at otherworldly intelligence permits people to ask and answer existential inquiries like "What am I doing here?" Though AI frameworks as of now just check one of the three parameters, IQ, the last two are pointless for AI to offer passionate help and prosperity.

II. RELATED WORK

Tidbit AND NON-FACTOID QUESTIONS

Sorts of inquiries can be isolated into two fundamental classifications: factoid and non-tidbit questions. Tidbit questions have a particular answer that can be gazed upward and have a reason for deciding a right answer. The inquiry "What is the capital of California?" is a tidbit question as there is just a single capital of California, Sacramento. Non-tidbit questions pose inquiries that are open-finished and might not have one clear answer. A case of a non-tidbit question might be "What is your opinion about this shirt?" Current AI frameworks experience difficulty accomplishing otherworldly intelligence. The apex of profound intelligence is the capacity to reply or if nothing else make an endeavor to respond to existential inquiries or think

existentially [4]. A case of an existential inquiry is, "What is the importance of life?"

Mental health questions are open-finished and don't have one precise answer. For example, if an individual asks oneself "For what reason do I have post-horrible pressure issue (PTSD)?" the appropriate responses will change between those with PTSD. One may encounter PTSD because of aggressive behavior at home or assault while another may have PTSD from seeing a companion kick the bucket in battle while in the Army. The analysis of mental disease is hard to pinpoint to one underlying driver. Numerous symptoms cover each other in various diseases or disarranges, which in itself makes it difficult to analyze mental sickness. In diagnosing a patient with a mental sickness or turmoil, there is a high comorbidity rate among mental ailments. Mental ailment determination intensely depends on the patient to hand-off indications as opposed to tests or execution, making it incredibly hard to pinpoint the reason. Specialists, medical caretakers, therapists, and so on must believe their patients are giving the right side effects to demonstrate what's going on. The side effects' signs are significantly harder to pinpoint, particularly if an individual isn't searching for the signs. With taking everything into account, these reasons make it

hard for AI frameworks to give criticism, not to mention people.

III. PROPOSAL WORK

Current Uses Of Ai In Mental Health Treatment Horyzons:

One framework that has demonstrated guarantee in helping young people with social therapy is Horyzons. The online module gives social therapy to youth who have encountered psychosis at a youthful age [1]. Horyzons enable the patients to learn, offer, and express sentiments as opposed to compelling obligatory participation at eye to eye bunch therapy. A major dread that surfaces in going to bunch therapy is the dread of imparting personal considerations to other people and stressing what the others will think. With Horyzons, these patients can don't hesitate to share and express their musings namelessly. Associating with the program, the client can don't hesitate to reveal data inside the mystery of an unknown chatbot bunch [1]. News sheets are directed by specialists and doctors to ensure the learning condition is protected and well disposed, while checking every patient's advancement.

Woebot

Like Horyzons, another specialist offered an option in contrast to routine gathering therapy as a computerized conversational operator, Woebot. Woebot associated with youthful grown-ups, matured 22-28, giving subjective

based therapy by means of a texting application to treat sadness indications [2]. An investigation of 70 members, 34 utilizing Woebot and 36 utilizing a digital book "Sorrow of College Students", found the Woebot bunch having a critical decrease in discouragement side effects contrasted with the benchmark group.

In spite of the reality individuals are living longer lives, individuals are getting all the more desolate. To help the "dejection emergency" in clinics and nursing homes, Paro was made. Paro is a robot that closely resembles a rich toy seal.

An examination hoped to see the impacts of Paro on patients and nursing staff at a nursing home. Paro is instituted as a mental responsibility robot, which means it's anything but an individual robot, nor can do hard work, yet its sole design is to cooperate with individuals as though the robot had human feeling [7]. Paro was executed in medical clinics and nursing homes far and wide, for example, Japan, Denmark, and Italy. To gauge for pressure, patients' pee were tried for levels of 17-ketosteroid sulfate and 17-hydroxycorticosteroids [7]. Following a time of five weeks, results indicated that patients had the option to beat stressors all the more promptly. The nursing staff had less worry during this period, because of patients

requiring less supervision while connecting with Paro [7].

Another therapy help that has been seen as useful has been video gaming. Linden Research Inc. built up a computer game specifically to help discourse and social therapy for individuals with chemical imbalance spectrum scatter [6]. The augmented experience reproduction game, Second Life, coordinated game play as patients utilized the game to turn out to be progressively familiar with social aptitudes while in a safe and non-compromising condition [6].

CONCLUSION

In spite of the fact that there is a lot of opportunity to get better of artificial intelligence, these mental health medicines ought to be reason enough to proceed with investigate right now. Many dread the headways of AI, which was exemplified from Future of Life Institute's Open Letter on AI [3]. Be that as it may, with the therapy headways in the mental health field, AI has demonstrated that there is potential for it to be advantageous to society.

REFERENCES

[1] Simon D'Alfonso, Olga Santesteban-Echarri, Simon Rice, Greg Wadley, Reeva Lederman, Christopher Miles, John Gleeson, and Mario Alvarez-Jimenez. *Artificial Intelligence-Assisted Online Social Therapy for Youth Mental Health*. *Frontiers in Psychology*. 8(2017) 796.

[2] KK Fitzpatrick, A Darcy, and M Vierhile *Delivering Cognitive Behavior Therapy to Young*

Adults With Symptoms of Depression and Anxiety Using a Fully Automated Conversational Agent (Woebot): A Randomized Control Trial. *Journal of Medical Interest Reserach Mental Health* 4(2), e19, 1-11.

[3] Gonenc Gurkaynak, Ilay Yilmaz, and Gunes Haksever. *Stifling Artificial Intelli-gence: Human Perils*. *Computer Law & Security Review*. 32(5), 749-758.

[4] Mohammad Kadkhoda and Hoorie Jahani. *Problem-solving capabilities of spiritual intelligence for artificial intelligence*. *Procedia - Social and Behavioral Sciences*. 32(2012), 170-175.

[5] Feng Liu, Yong Shi, and Ying Liu. *Intelligence Quotient and Intelligence Grade of Artificial Intelligence*. *Annals of Data Science*. 4(2), 179-191.

[6] David D. Luxton. *Artificial Intelligence in Psychological Practice: Current and*

Future Applications and Implementations. *Professional Psychology: Research and Practice*. 45(4), 332-339.

[7] Takanori Shibata and Kazuyoshi Wada. *Robot Therapy: A New Approach for Mental Healthcare of the Elderly - A Mini-Review*. *Gerontology*. 2011(57), 378-386.

[8] "Your Staff's Mental Health Is a Workplace Safety Issue - Humanengineers". *Humanengineers*. 2017-06-20. Retrieved 2018-01-11.

[9] ^ Jeronimus BF, Kotov R, Riese H, Ormel J (2016). "Neuroticism's prospective association with mental disorders: a meta-analysis on 59 longitudinal/prospective studies with 443 313 participants". *Psychological Medicine*. 46 (14): 2883–2906. doi:10.1017/S0033291716001653. PMID 275235 06.

[10] ^ Clark, Wayne; Welch, Stephanie N.; Berry, Sandra H.; Collentine, Ann M.; Collins, Rebecca; Lebron, Dorothy; Shearer, Amy L. (2013-03-14). "California's Historic Effort to Reduce the Stigma of Mental Illness: The Mental Health Services Act". *American Journal of Public Health*. 103 (5): 786–794. doi:10.2105/AJPH.2013.301225. ISSN 0090-0036. PMC 3698820. PMID 23488486.

[11] ^ Weare, Katherine (2000). *Promoting Mental, Emotional and Social Health: A Whole School Approach*. London: RoutledgeFalmer. p. 12. ISBN 978-0-415-16875-5.

- [12] ^ Office of the Deputy Prime Minister – Social Exclusion Unit: "Factsheet 1: Stigma and Discrimination on Mental Health Grounds". 2004.
- [13] ^ Royal College of Psychiatrists: *Changing Minds*.
- [14] ^ Barker, Phil (2010). *Mental Health Ethics: The Human Context*. Routledge. p. 146. ISBN 9781136881930.
- [15] ^ Yin, Yi; Zhang, Weijun; Hu, Zhenyu; Jia, Fujun; Li, Yafang; Xu, Huiwen; Zhao, Shuliang; Guo, Jing; Tian, Donghua; Qu, Zhiyong; Courvoisier, Delphine Sophie (26 September 2014). "Experiences of Stigma and Discrimination among Caregivers of Persons with Schizophrenia in China: A Field Survey". *PLoS ONE*. **9** (9): e108527. Bibcode:2014PLoSO...9j8527Y. doi:10.1371/journal.pone.0108527. PMC 4178170. PMID 25259732.
- [16] ^ "NAMI Presents: Cure Stigma". NAMI Presents: Cure Stigma. Retrieved 2018-09-15.
- [17] ^ Budhwani, Henna; Hearld, Kristine Ria; Chavez-Yenter, Daniel (1 April 2015). "Generalized anxiety disorder in racial and ethnic minorities: a case of nativity and contextual factors". *Journal of Affective Disorders*. **175**: 275–280. doi:10.1016/j.jad.2015.01.035. ISSN 1573-2517. PMID 25661302.
- [18] ^ Hearld, Kristine Ria; Budhwani, Henna; Chavez-Yenter, Daniel (15 March 2015). "Panic attacks in minority Americans: The effects of alcohol abuse, tobacco smoking, and discrimination". *Journal of Affective Disorders*. **174**: 106–112. doi:10.1016/j.jad.2014.11.041. ISSN 0165-0327. PMID 25496758.
- [19] ^ Budhwani, Henna; Hearld, Kristine Ria; Chavez-Yenter, Daniel (1 March 2015). "Depression in Racial and Ethnic Minorities: the Impact of Nativity and Discrimination". *Journal of Racial and Ethnic Health Disparities*. **2** (1): 34–42. doi:10.1007/s40615-014-0045-z. ISSN 2196-8837. PMID 26863239.
- [20] ^ Budhwani, Henna; Hearld, Kristine R. (May 2017). "Muslim Women's Experiences with Stigma, Abuse, and Depression: Results of a Sample Study Conducted in the United States". *Journal of Women's Health*. **26**(5): 435–441. doi:10.1089/jwh.2016.5886. PMID 28263695.
- [21] ^ Budhwani, Henna; Hearld, Kristine R.; Milner, Adrienne N.; Charow, Rebecca; McGlaughlin, Elaine M.; Rodriguez-Lauzurique, Mayra; Rosario, Santo; Paulino-Ramirez, Robert (December 2018). "Transgender Women's Experiences with Stigma, Trauma, and Attempted Suicide in the Dominican Republic". *Suicide and Life-Threatening Behavior*. **48** (6): 788–796. doi:10.1111/sltb.12400. PMID 28950402.
- [22] ^ Budhwani, Henna; Hearld, Kristine R.; Milner, Adrienne N.; McGlaughlin, Elaine; Charow, Rebecca; Rodriguez-Lauzurique, Rosa Mayra; Rosario, Santo; Paulino-Ramirez, Robert (2017). "Transgender Women's Drug Use in the Dominican Republic". *Transgender Health*. **2** (1): 188–194. doi:10.1089/trgh.2017.0032. PMC 5684664. PMID 29142909.
- [23] ^ Richards, PS; Bergin, AE (2000). *Handbook of Psychotherapy and Religious Diversity*. Washington, DC: American Psychological Association. p. 4. ISBN 978-1-55798-624-5.
- [24] ^ "Religious Trauma Syndrome". *Recovering from Religion*. Retrieved 2018-12-08.
- [25] ^ Merelli, Annalisa; Merelli, Annalisa. "Jeff Sessions's new task force puts freedom of religion first". *Quartz*. Retrieved 2018-12-08.
- [26] ^ "How culture shapes your mind — and your mental illness - The Boston Globe". *BostonGlobe.com*. Retrieved 2018-12-08.
- [27] ^ Extremera, Natalio; Rey, Lourdes (29 September 2016). "Attenuating the Negative Impact of Unemployment: The Interactive Effects of Perceived Emotional Intelligence and Well-Being on Suicide Risk". *PLoS ONE*. **11** (9): e0163656. Bibcode:2016PLoSO..1163656E. doi:10.1371/journal.pone.0163656. PMC 5042532. PMID 27685996.
- [28] ^ Paul, Karsten (2009). "Unemployment impairs mental health: Meta-analysis". *Journal of Vocational Behavior*. **74** (3): 264–282. doi:10.1016/j.jvb.2009.01.001.
- [29] ^ Power, A (2010). "Transforming the Nation's Health: Next Steps in Mental Health Promotion". *American Journal of Public Health*. **100**(12): 2343–6. doi:10.2105/AJPH.2010.192138. PMC 2978180. PMID 20966366.
- [30] ^ Kessler, Ronald C.; Demler, Olga; Frank, Richard G.; Olfson, Mark; Pincus, Harold Alan; Walters, Ellen E.; Wang, Philip; Wells, Kenneth B.; Zaslavsky, Alan M. (16 June 2005).