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Project 1: Research Paper

ELLIE the Artificial Intelligent Psychiatrist

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Ellie

Introduction

Artificial Intelligence has been made to improve the functionality of life, even more so for those with busy lives. Although society has yet to improve on machines that can think on its own, it is said that in the next forty to forty-five years, it is predicted that artificial intelligence will be able to think and act on its own. With the innovation of what is as close to an artificial intelligence life form as it can get, such as Siri, more people are relying on the knowledge of machines rather than other people. So when scientists are able to create an artificial intelligent psychologist called ELLIE, the psychiatric community is in awe.

Current Use and Benefits

ELLIE is a artificial virtual psychiatrist created by a team of researchers at the Institute of Creative Technologies. She behaves almost identical to a human psychiatrist, she will ask the same questions, pose like one, and she does not judge. While this new program is not widely used as of yet, ELLIE mostly sees military personnel that have returned from deployment who could potentially be prone to Post-Traumatic Stress Disorder (PTSD) and are at risk to themselves and others if the signs are not caught beforehand. She is able to detect even the slightest bit of facial and body movement, your words and even the tone. These help her in analyzing the

information you have given her. She studies movement that can indicate post traumatic stress disorder. These can be detected by looking at the patient's movements. For example, a patient with post traumatic stress disorder will do self-adaptor gestures such as touching their hands or head. ELLIE is able to recognize these actions to gather Intel on the patient's mental health condition. Once ELLIE suspects that the patient may be suffering from PTSD, she will inform them confidentially that they may be at risk and she will suggest on ways to get treatment (The Computer).

Security Aspects

Any security concerns would be loss of information as a result of hacking and would lead to the patient's private information being leaked. It is debatable whether or not it is much safer keeping information physically or digitally, however the risk of loss of information may be higher with technology. Within the psychiatric community, the privacy of the patient is top priority. A human psychologist and therapist can store their patient's information within paper files and inside their mind, technology is always at the risk of being breached. This ultimately can lead to a loss of privacy.

Legal, Ethical and Social Implications

Two words--Empathy gap. Sherry Turkle, an expert in the field of science and technology, describes empathy gap as the ability to put yourself in someone else’s shoes and being able to visualize what they are going through (Turkle). While machines are smart enough to pick up on things that the human eye can miss, there

seems to be a huge gap emotionally. Machines can pick up on a human's physical abnormalities, changes, and patterns. They can collect information through a shrink but they don't know why and how it is important to a human. This is something only another human can understand. It is significantly easier to obtain information by using a robot to do the talking. People are able to open up more knowing that they would not be judged, but this method can cause the robot to overlook something very vital. Human understanding and interaction. That is the key complications of having a robot therapist. There is yet to be legal controversy surrounding this new invention, however it is assumed to be legal as medical research professionals use ELLIE to treat military personnel for the time being (The Computer).

Future Use

The purpose of ELLIE is for information gathering. It's been proven that a patient will refuse to disclose personal information to another person. However, a robot might produce a different outcome. In the article, "Software agents and robots in mental therapy," Nomura Tatsuya states that humans willingly speak to robots as if they were human as well. Whether this is done unconsciously or subconsciously, For example, is a virtual robot speaks to a person in a polite manner, the person will respond back politely as well (Nomura 2009). Johnathan Gratch, a researcher at the Institute for Creative Technologies in Los Angeles decided to test this idea. He gathered 239 participants to speak in front of ELLIE; Half of the participants were told that they would be interacting with an artificial intelligent human and the other half were told, falsely, that ELLIE was a puppet that was controlled by someone

behind the scenes. After the interview, researchers gave the participants questionnaires. Those who thought ELLIE was a puppet reported that they had greater fear disclosing private information compared to those who knew ELLIE was a virtual human. ELLIE is able to remedy that. She will be able to gather information that a person is unwilling to disclose to their own therapist. By doing this, the therapist is able to diagnose and prescribe their patient as accurately as possible (The Computer). ELLIE will not be used as a substitute therapist, Louis-Phillippe Morency says, ELLIE's co-creator. She is meant to be a decision support tool that gathers information for the human clinician. The human clinician will still be tasked with diagnosing and treating the patient (Robinson 2015).

Conclusion

With the new wave of technology, from artificial intelligent robots to virtual reality. Society has invented a variety of up and coming technology to better fit the lifestyle of people. While ELLIE is still being used on a smaller scale, she still makes quite an impact on the psychiatric community. Her technology is advanced enough to detect changes in body posture, voice recognition, and eye movements. She's even able to gather information that normal psychiatrists cannot. There is still a wide range of things ELLIE cannot do, but with researchers always finding ways to exceed limitations, there is no telling what ELLIE will be able to do.

References

Nomura, T. (2009). Software agents and robots in mental therapy: Psychological and sociological perspectives. *AI & Society, 23*(4), 471-484. doi:http://dx.doi.org/10.1007/s00146-008-0180-3

In this article, Nomura talks about the interaction between machines and humans. Or rather, he speaks of the interaction between machines and humans in the therapeutic process. Contrary to many beliefs, he states that humans will unconsciously speak and react to machines as if it were human. This also applies to humans that are aware of the fact that they are speaking to a machine. For example, he states that if a machine were to send polite responses, a person will be polite back.

Robinson, A. (2015, September 17). Meet Ellie, the machine that can detect depression. Retrieved February 13, 2017, from https://www.theguardian.com/sustainable-business/2015/sep/17/ellie-machine-that-can-detect-depression

This article gives a bit of information on the program ELLIE, it's developments and goals. This article has a video that shows just how smart ELLIE is. How she is able to detect a person's movements and speech. They also talk about how she is more likely to get a person to disclose their information compared to a person. The co-creator of Ellie will also go into more depth of Ellie's use for the psychiatric community.

Sotala, K. (2012). Advantages of Artificial Intelligences, Uploads, and Digital Minds. Retrieved from https://intelligence.org/files/AdvantagesOfAIs.pdf

This article goes more in depth of artificial intelligence and its advantages. It goes over multiple elements of artificial intelligence. These include: hardware advantages, their intelligence, optimization power, their processing power, and memory. These all contribute to the AI's emergence in the technology industry. While this article is not necessarily information on Ellie, it does describe some of the components that make up Ellie.

The computer will see you now. (2014, August 20). Retrieved February 13, 2017, from http://www.economist.com/news/science-and-technology/21612114-virtual- shrink-may-sometimes-be-better-real-thing-computer-will-see

This article goes over more of ELLIE's abilities. They were able to hold a test to determine whether or not people were willing to disclose personal information to a computer. Ellie would go through a number of starter questions that do get more intimate. To put it simply, half of ELLIE's patients were informed that she was an avatar while the other half were told she was a puppet controlled by a psychiatrist hidden. They realized that those who thought she was an avatar were more willing to talk about their personal

problems as opposed to those who thought she was a puppet.

Turkle, S. (2016, Nov). The empathy gap. *Psychotherapy Networker, 40* Retrieved from https://search.proquest.com/docview/1867912920?accountid=14541

Turkle speaks of the empathy gap between machines and humans and why it is more important for human interaction. She briefly goes over why machines and humans are incompatible in the first place as the understanding between man and machine is virtually impossible. She stresses the importance of human interaction and how technology seems to be giving humans a lack of empathy. An example she gave was using a phone in the middle of a conversation. Many people do not know how hurtful it is to be disrupted by another person's phone call. Thus, this is why she states that humans are beginning to lack empathy for others.

W. (2015, April 23). Pros and Cons of Artificial Intelligence. Retrieved February 13, 2017, from http://healthresearchfunding.org/pros-cons-artificial-intelligence/

This article goes over the pros and cons of artificial intelligence. Some of the pros include: no emotional barrier, cost efficient, no breaks, and inhumane circumstances. Emotional barriers keep a more professional work environment for others. Financial issues would only go toward machine use and not other items. Machines also do not need to take breaks and can do more work in a day than one employee can. The cons include: job loss, loss of information, no personal connection and the possibility of a security risk. It is no surprise for there to be job loss in an area where machines can actively produce more of a product or outcome where a human cannot. The risk of hacking and loss of information is always a risk as well.