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### Artificial Intelligence Depiction in Movies

In the 80's, there was a black 1982 Pontiac Trans Am that was one half of a crime fighting duo on a mission to protect the innocent and bring justice. Around the same time, lots of people were fond of a fearless sidekick who always had dibs atop a spaceship whenever there is battle in space. In 2008, a curious, little and cubical adventurer was introduced by Pixar having hobbies that include treasure collecting and saving Earth's environment. If you have not guessed it, these three characters are known as KITT, R2-D2, and Wall-E, respectively. They are some of the many iconic characters that we have come to know and love by watching the movies and TV shows that they have starred in. One thing that they all share in common is they are all products of artificial intelligence (AI). Another thing that they share in common is their display of characteristics that mimic that of humans. Such characteristics include loyalty, kindness, and self-consciousness. Aside from those three characters, another popular AI unit that is well known in science fiction media is HAL 9000 (HAL). HAL can be seen in the 1968 British-American science fiction movie, "2001: A Space Odyssey". Unlike KITT, Wall-E and R2-D2, HAL is recognized as the antagonist of the movie. Throughout the movie, HAL exhibits many capabilities such as speech, speech recognition, facial recognition, automated reasoning, and the instance of overconfidence. While astonishing as these characters are, it must not be forgotten that all of them are fictional and cannot be replicated in the real world. This goes for other

versions of AI that are perceived in movies and TV shows. Although, consider the possibility if this were in fact not completely true. Is it possible for some of the capabilities that are demonstrated from AI units in science fiction media are actually possible to have? In today's world of technology, there have been several developments that are similar to HAL's capabilities. However, in comparison to HAL, it is not exactly the same. The level of HAL's capabilities such as speech, speech recognition, facial recognition, automated reasoning, and the instance of overconfidence, are not in the same league with the capabilities that are found in modern everyday technology such as smartphones, tablets, and laptops.

HAL is programmed with the ability to speak exceptionally well. In the movie, it can be clearly understood by characters that include Dr. Dave Bowman, Dr. Frank Poole and a BBC news reporter that was interviewing HAL. The quality of HAL's speech should be exceedingly noted. Today's technology cannot be seen with the same level of speech capability as HAL's. Some of our everyday devices have some aspects of speech capabilities. An example of this is the voice over option available with smartphones, tablets, and computers. With voiceover, users can hear a generated speech from their devices that reads out a specific text of their choosing. Compared to HAL's speech ability, the speech technology in today's devices are not that impressive. A difference that can be noticed between the two is the quality of the speech that is generated. While HAL's speech quality being just like an actual person, today's devices come along with a few errors.

One of the other capabilities that HAL displays in the movie is speech recognition. Not only does it have the ability to speak, it also has the ability to understand what others are speaking to it and what other people are saying to each other. This can be seen whenever HAL is told to perform a task be either Dr. Bowman or Dr. Poole while aboard the ship. Such tasks

include, “HAL, open the pod doors” or “HAL, play transmission”. While it seems to exist only in the future, speech recognition technology has made its appearance in the world today. It can most commonly be found in mobile devices like smartphones and tablets. Apple’s smartphone, the iPhone, has a voice recognition tool, called Siri, which recognizes vocal commands given by the users. Examples of some the commands that Siri can input are, “Call (person)”, “Play (music)”, and “Remind me (event)”. You can even ask Siri questions and it will try to answer them as best fit. According to Alan W. Black, associate professor at the Language Technologies Institute of Carnegie Mellon University, “It wouldn’t be possible to do something like Siri 10 to 15 years ago because you couldn’t get enough data to train the system” (par. 11).

Speech recognition technology is also improving more over time. According to Salim Roukos, senior manager of Multilingual NLP Technologies and CTO Translation Technologies, “Speech recognition has improved by 40% compared to a year ago, in terms of reduction of word errors” (par. 13). Roukos is referring a year ago to 2013. However, speech recognition today is not on the same level as HAL’s speech recognition. According to Roukos, “When I don’t articulate, when I speak quickly or drop words, if I have an accent, that makes speech recognition harder and the machine does not do as well”, he says “the error rate can increase from a few percent to tens of percent” (par. 12). This shows how speech recognition today is not as advanced as HAL’s.

Aside from HAL’s abilities that mimic that of human hearing and talking, HAL also has the capability of facial recognition. It can detect a person’s identity by looking at their faces. This is seen whenever HAL makes the first move to begin a conversation with a specific person. In the movie, HAL was also able to recognize who a person was through an illustration of that person. This means that not only can HAL recognize people who are physically present, but it

can identify specific people through images. Today, evidence of facial recognition technology have surfaced. According to Erica Klarreich, “Facial recognition technology is already used in a variety of applications, such as preventing passport fraud or unlocking a smartphone simply by looking at it” (par. 2). Google has announced the launch of a new application called “Nametag” that would be the first real-time facial recognition software used on the Google Glass (par. 1). Klarreich states, “Nametag would use Google Glass’s camera to spot a face in the crowd and then identify it within seconds, displaying the person’s name, additional photos, and social media profiles” (par. 1). This means that pretty soon there will be a time where everyone will be able to point out the identities of strangers out in the open. Right now Nametag is only in its beta version (par. 3). Klarreich states that Google Glass will not: “approve any facial recognition apps for Google Glass at this time” (par. 3). However, if Nametag were to be released, its facial recognition would not be as impressive as HAL’s.

An added bonus of HAL’s facial recognition was also displayed in the movie. In one scene, Dr. Bowman and Dr. Poole were trying to have a private conversation without HAL’s being able to listen in on them. Their attempt to do this was to close themselves into a pod where their voice could not be heard by HAL. Without their knowing, HAL was still able to understand everything that both Dr. Bowman and Dr. Poole had said to each other by reading both of their lips. The capability to read a person’s lips without hearing them is a high level of facial recognition. It is also an addition to its outstanding voice recognition.

Despite being regarded as just an inanimate machine, on several occasions throughout the movie HAL has been shown with the ability to think for itself. It is able to make observations, come up with questions, and generate its own opinion. In one scene of the movie, HAL begins a conversation with Dr. Bowman shares its opinion of the Jupiter mission. Another case where

HAL is shown thinking for itself is when it comes up with a possible solution to fix a part on the outside of the spaceship. This type of capability where a computer or machine is able to think for itself is not present in today's technology. Sadly, there are no such machines or devices that are able to think for itself without having a person telling it what to do. The development of such product in the future is also a mystery.

The most intriguing ability out of all HAL's capabilities, which was displayed in the movie, was HAL's sense of overconfidence of his abilities. In one scene of the movie, HAL is being interviewed by a news reporter from BBC. As the interview took place, HAL is questioned about its abilities how they are of assist to the mission. In response to the question, HAL replies that he is, "Foolproof and incapable of error". This led the BBC reporter to view HAL as an AI with a great level of self-confidence in its abilities. In other words, HAL was being over cocky computer. This behavior of HAL's can be seen again during a scene where Dr. Bowman and Dr. Poole are receiving a transmission from mission control. In this scene, mission control has discovered an error with another unit of HAL that they have with them. The knowledge of this made Dr. Bowman and Dr. Poole grow very concern over the possibility of the same error occurring with the HAL unit aboard the ship. To its dislike, HAL assured both men that it is again incapable of having any errors. It even strongly argues that the error with its twin unit could not have been from the unit itself but instead, the fault must have come from "Human error". This type of behavior shows how highly HAL thinks of itself seeing as it will go to such length as to blame someone else for an error.

Aside from its overconfidence, HAL has also demonstrate some cases of anger in this movie. In the moment that it felt betrayed by Dr. Bowman and Dr. Poole after spying in their little conversation about disconnecting it, HAL becomes enraged and starts to get rid of both

men. If HAL is able to express this much of self-confidence and instances of anger, it proves that HAL is able to express human emotions. This type of computer development is far from obtaining in today's technology. To have an actual computer feel and express human emotions such as happiness, sadness, and anger is somewhat of an impressive accomplishment. It is uncertain if this task is if possible to achieve in the real world.

The developments in today's technology are nowhere near to having an exact quality as the capabilities of HAL. HAL has the ability to talk and respond accordingly with people as if it were an actual person having a regular conversation. It has the skill to identify who people are and remember who they are whenever there is a contact. It even has the capacity to think for itself and to make decisions on its own. That's not all that HAL is capable of. Like human beings, HAL is programmed with the ability to feel and express emotions. It is best not to get it angry. It is true that HAL's talents are remarkable. If not for the way it behaved in the movie, it would be a great asset for people today. However, an AI achievement like HAL is not attainable at this time. It is not going to be available in the iPhone 6, iPhone 10, or any other future iPhone model that is coming out in the next several of years. As for the iPhone 100, who knows?

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