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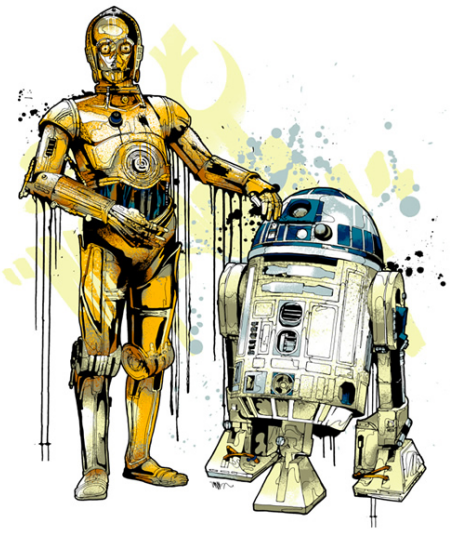
LE-1310-402
Research Paper

ROBOTICS

Over your lifetime, how many robots do you remember seeing on the big screen? One, five… or perhaps the number is so large you really do not remember a true number. Robotics has been around for a few decades and most of us cannot even remember the last time we actually placed eyes on a modern day robot. Our recollections typically come from the robots made famous by Hollywood.

For this very basic and straight forward research paper I would like to take a look back at four (4) specific robots which have earned a place within my memory. Each robot represented within this paper will be discussed in detail and compared with various topics such as human-like design to artificial intelligence. I will discuss each robot in turn while relating their design and concept with several topics discussed over the course of this semester. Where to begin?



C3PO & R2D2

These two conglomerates of robotic systems have been part of my childhood from a very early age. I can distinctly remember wanting to touch and talk with both of these beloved characters. They have both been a staple in science fiction lore. These two particular cinematic representations of future robotics have shaped the minds and imaginations of mechanical engineers everywhere.

R2D2 has the description of being an astro-mech droid. Within the Star Wars novel universe, R2D2 was refered to as a thermocapsulary dehousing assister; seems like a few big words to describe a very specific task. The initial designers of the R2D2 model utilized actual robotic systems in various ways. For example, the R2D2 model used during filming of the Star Wars movies had an operational periscope which came out of the upper dome and retracted back into

the body of the droid. Another robotic system employed during filming was the front stabilizing wheel dropping down from the torso and assisting R2D2 in high speed mobility functions.

R2D2 does not maintain a typical robotic resemblance as we have seen in our coursework. When comparing R2D2 and COG, the concept which states “Humanoid intelligence requires humanoid interactions with the world,” R2D2 fails miserably. The design of R2D2 is not at all human like and may resemble more of an animal like companion. If the Star Wars universe actually existed, the design of R2D2 would appear as if a specific task was created for this particular robot; however, similar to Andrew in Bicentennial Man, R2D2 appeared to be unique and one of a kind.

R2D2 showed multiple characteristics which would allow one to presume R2D2 had a personality and could possible express emotion. When a situation became dire or difficult, R2D2 could be heard issuing a downtrodden tone. Physically during such times, R2D2 could be seen “dancing” back and forth in an almost anxious manner. Anxiousness and excitement are emotions felt by every human being and in this case it appears as if R2D2 was capable of the expression of said emotion.

The companion piece, C3PO, was a protocol droid specifically designed to serve human beings. C3PO was designed to be fluent in “over six million forms of communication” with the main function of assisting etiquette, customs and cultural translation. C3Po is much closer to what my concept of robotics can be in relation to modern day design and function.

C3PO is a walking machine. The design of C3PO closely resembles a COG approach and is human-like in all ways. Visually you can see the robotic systems within his torso as well as the mechanisms which create his arm and leg articulation. One of the most interesting aspects of C3PO is you can actually hear the mechanical systems contained within when he moves.

From an AI perspective, C3PO also appears to be unique and one of a kind. When making comparisons to other protocol droids within the films, C3PO stands out with emotional and human characteristics. There are moments when C3PO is obviously scared and assuredly anxious. One aspect of AI which C3PO has mastered is speech intelligence. He is able to recognize queues from the humans he is

interacting with and provide a reasonable and appropriate response. The design of C3PO appears to have accomplished this feat without the use of human biochemistry; the advanced algorithms conceptually present within C3PO closely resemble those algorithms currently under development today.

ROBOT B-9

"Danger Will Robinson!" Famous words issued by a well-known robot from a very popular television series, *Los in Space*. The B-9 robot was characterized as a class M-3 general utility non-theorizing environmental control robot. Fans of the show will quickly recognize this piece of machinery who seemed to accompany Will Robinson during every endeavor.

What exactly does general utility non-theorizing environmental control robot mean in layman terms? General utility could be defines just as it sounds; this robot was designed to lift, push and pull in order to assist its human counterparts. Non-theorizing can be defined as the ability not to respond to questions, concepts or ideas; in essence it is making sure the robot cannot think or act on its own. Environmental control can also be defined just as it sounds; the ability to garner some form of control over the environment which will again suite its human counterpart.

Upon initial research, B-9 seems very intimidation and not at all user friendly. The sound you would call his voice is very monotone and does not convey any sort of emotion. The robots being portrayed in the 1960s were robotic, for lack of a better term. Their design did not mimic human physiology and they were very frightening. The human interaction with these machines would not be well received in today's society.

The interesting part of B-9 occurred whenever Will or anyone from the Robinson family was in some sort of danger. It was obvious the designers of B-9 had the Three Laws of Robotics clearly in mind. B-9 did not show any real signs of uniqueness during the clips I had watched to gather information. His demeanor was very stale and lacked emotion. His AI was nearly non-existent beyond his design as a utility robot.

CONCLUSION

It is truly fascinating to enroll in a course about artificial intelligence and see what sticks. The entire time I was reading on the topic and posting to the discussion boards, I kept thinking about what influence television and Hollywood had on current thought processes concerning robotics. Take Data from Star Trek for example; Data is the quintessential concept of what we as humans want from AI. Data is a fully functional android that seemed to grow as an individual nearly every episode.

Robotics as a whole will continue to gain ground in modern society. The portrayals of robots and androids on the big screen will continue to influence the imagination of scientists and engineers. Those imaginations will create the future for all of us and shape our vision of what robotics will one day become. I am not pro AI and I feel as if AI has no place in human civilization in its current incarnation; however, I am and will always be pro-imagination.

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