**IT Technologies Report – Robots**

**Overview**

Modern day robotics can be found within many different fields, from healthcare and manufacturing to entertainment and construction. While science fiction usually portrays robots in a highly fantastical light, oftentimes not ending particularly well for humans, their application and use in the 21st century is more about how our lives and environments can be improved, or how tasks can be carried out in a better, more efficient way. With so much interesting research and incredible progress in recent years, especially when combined with fields such as machine learning and artificial intelligence, robots are an exciting part of technology that still leaves much to be learned and discovered.

Perhaps one of the more common types of robots we would think of in a practical sense are those involved in manufacturing. Certain tasks that may be involved in a manufacturing process, such as within the auto industry, are relatively dangerous to humans even when undertaken with care and workplace precaution. There is almost always some type of risk involved when it comes to machine labour, but these jobs also require a level of thought and perception that only humans generally possess, meaning that humans will generally proceed with the task despite the danger. Robots are essentially used to eliminate the risk to human life or safety by being “employed” for these tasks instead. (Wired 2018) Naturally, there are other results from this, some of which may be seen as undesirable, which will be discussed further in a latter section of this report.

Robots used for factory work were more traditionally those that remained in place, unable to walk around freely, and perhaps didn’t look like the usual archetype of a “robot” we have come to expect. (Wired 2018) They were generally programmed to work and exist within mostly static environments, completing the same repetitive tasks. While they could certainly move as was required of these tasks, there was very much a limit to their mobility. Around the 1980s, Honda began creating a new type of “humanoid” robot that could not only walk around, but also perform simple social actions, such as shaking hands or waving. This revolutionary prototype led to more advanced bipedal robots, which in turn resulted in the flourishing move towards highly advanced robotics, which we see today. (Wired 2018)

The advances we see in the media around robotics are usually the particularly exciting ones – not necessarily Roombas or repair units. The entertainment industry is heavily involved with robotics research, especially as robots have grown more lifelike, intricate and advanced. Robotic advancements can be seen in the film and themed entertainment sectors, especially as animatronics become more detailed and “realistic”. Animatronics is a field of robotics encompassing many different mediums, such as animation and audio, that aims to emulate human (or animal) life. Animatronic robot research has become so advanced that an acrobatic humanoid figure able to “flip through the air and stick a landing every time” was recently revealed. (TechCrunch 2018)

Perhaps most significant is the way in which robotics has elevated the healthcare industry. Robots can be seen as remedying a part of humanity that can sometimes lead us astray – our emotions. Robots don’t have to factor in personal emotion at all, whereas humans base a significant portion of their decisions from how they feel. Removing that element is especially impactful when considering difficult surgical procedures. Robots do not get emotional, tired or distracted, leading to decisions based purely from fact and programmed knowledge. A popular line of thinking within medical robotics is that this could essentially render a procedure “safer” for a patient. (Create Digital 2017)

**Impact**

Much of the impact of robotics feels like it may be quite obvious – we are living in a time when we are privy to some of the most exciting strides in robotics and AI occurring, which are generally widely publicised in the headlines. Of course, new developments are often met with a level of distrust or even panic. There is always a fear that people may lose jobs and careers to robots, and perhaps some of these fears are at least a little valid. Robots have replaced humans in jobs before, and continue to do so, but there is probably something to be said for the balance of progress and efficiency. Simply put, over the course of civilization, if humans have found an easier way to do something, we usually do it. There is something to be said for thinking of this no differently.

Continuing the discussion around medical robotics, it is often suggested by researchers that robots will be able to make more accurate diagnoses than humans, especially as specialised robots are trained on how to read X-rays, MRIs and even blood samples. As we have discussed, once emotion is removed from the decision-making process, there is less room for error. This hypothesis is being tested currently on cadavers, with robots undertaking generally minor surgical procedures, which although minor still require a high level of skill and carry varying degrees of risk for the so-called “patient”. (Create Digital 2017)

While opinions on this topic are strong, the biggest impact of progress should always be positive. Of course, there are negatives and positives to everything, even in scientific research, but despite potential redundancies and huge industry shake-ups, there are far more reasons to be excited about robotics developments than concerned.

**Personal Impact**

It’s difficult to say for sure how much robotics will affect us, whether in our daily life or the workplace. It’s quite safe, however, to say that we should expect more changes over time than less. We can already see huge shifts in the way work has been accomplished over time, before and after the technology boom, or even further back, prior to the Industrial Revolution. Robotics is still a fairly new field, and considering how much research is currently being done, it’s almost impossible to see where it will all actually go from here.

Having worked as an electronics repairer, I can certainly see that role eventually being fully automated, rather than employing manual labour to accomplish the task. This could be the same for many of my friends and family, especially those with some kind of technical trade or physical work. Other friends working in data science or finance could also find their jobs changing to a degree due to the robotics industry. I think that many other jobs, however, may require human empathy, emotion, or contact, which would mean they could be better suited to traditional employees instead of robots.

In terms of my future career, I would be excited to see the way that robots can be created to seem more realistic, or ways a favourite character from the screen could be brought to life. Immersive experiences are more and more popular as a means of entertainment, and robotics certainly have a huge hand in this. Robots could (and do) definitely make our lives easier, but they can also make our lives more creative and exciting.

Medical robots especially have the ability to improve human quality of life. In my opinion, the positive impacts greatly outweigh the potential negatives, and it’s exciting seeing this field advance.

**References**

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