**IT Technologies - Robots**

**What does it do?**

This section will focus on the most widely used robots throughout the world, the industrial robot.

According to (Statista 2021)*,* in 2019, there were approximately 2.72 million industrial robots in operation throughout the world.

The industrial robot performs, pre-programmed, automated tasks. The most common tasks include palletising, packaging and labelling, product testing, painting, welding and assembly tasks, (Wikipedia/Industrial robot 2021). These operations are achieved largely by a robot that has a wide range of freedom of movement, the articulated arm robot. Having a similar shape to a human arm, it can range from working with 2, all the way 10 axis (points of rotation), making it a versatile piece of equipment for a number of different operations in the manufacturing industry.

**What is the state of the art of this new technology?**

Tipped to have the biggest growth in the field of industrial robots, for the advancements in use of technology along with its lightweight, more capable construction, is the CoBot. The CoBot is a robot that collaboratives with humans. It has also eliminated the need to run the robot inside a safety bulky safety cage and has the added ability of ‘learning’ while on the job. This means the robot can be easily re-taught by the human collaborator by moving the robot arm along a new desired path. The robot then remembers this path then repeats its (Wikipedia/Cobot 2021). This is a tremendous advancement when compared to the standard Industrial robot which requires a new path to be reprogrammed by an engineer, which is a timing and costly exercise.

Another state of art feature for the industrial robot is the addition of vision systems. Vision systems have increased the functionality by allowing robots to perform new tasks such as picking parts from a moving conveyor and using the vision system to allow the robot to make decisions based the object in front of it.

**What is likely to be done in the next 3 years?**

The collaboration of AI and robots is currently being developed and tested, the merging of these two technologies looks to be the focus in the industry over the next several years. Teaming robots with AI will give the ability for robots to teach themselves how to handle new objects and open the possibilities of decision making based on environment, for example managing obstacle avoidance and creating an alternative route to continue the task at hand without the need to stop and having an operator intervene. Arguably the biggest benefit will be the ability for the robot to learn from its mistakes and allowing the robot to solve a wide array of tasks without the need to program it for one specific task (Robotics and Automation news 2020).

**What technological or other developments make this possible?**

The technological development that makes this possible is the advancements in machine learning in recent times. While machine learning is nothing new, its capabilities and success is recent times is what makes designers and creators of new technology expand its uses and develop new applications for the technology. Another development that requires the advancement in this technology is the increased manufacturing rates throughout the world and the need to run manufacturing plants 24/7. Robots are an obvious choice for this work and can be seen in reports by the(International Federation of Robotics),which shows increases in installations from 60,000 units worldwide in 2009 to 422,000 units in 2018. This supply and demand give companies a greater incentive to build the latest and greatest robots on the market.

**What is the potential impact of this development and what is likely to change?**

The greatest impact having a robot that is more capable, would have to be the effect on people’s jobs. According to a recent study, (“Robots and Jobs: Evidence from US Labor Markets” 2020), robots not only displaced jobs, to date approximately 400,000 jobs in the US, but also decreased wages for the existing work force by 0.42%. Deploying a more advanced and capable robot to the industry would likely add to these figures.

There is also the flip side to this argument, robots will create more skilled jobs, but this argument serves little meaning to the men and women losing their jobs to robots.

**Which people will be most affected and how?**

Like most changes, there’s always people that will benefit and people that will not. The people that will benefit are persons with skilled jobs in the industry and business owners due to increases in production that come with automation. The people that will not benefit and in some cases will be greatly affected are the people the robot is replacing to perform a task. For example, an automotive assembly manufacturer may choose to employ a robot to perform the painting and welding tasks that an employee once carried out.

**Will this create, replace or make redundant any current jobs or technologies?**

As mentioned in the previous statement, this will both create and make some jobs redundant.

Jobs for skilled workers will be created to perform the required programming, design and ongoing maintenance required for this type of equipment. The tasks the robots are designed to carry out inevitably replace the humans that once performed these duties.

**In your daily life, how will this affect you?**

Personally, I work in Industrial Automation so overall this will have a positive effect. The more businesses invest in automation, such as robotics, the greater the need for persons with the knowledge to keep these types of technologies operational and optimised. With this increased demand, comes more jobs. If these jobs cannot be filled, the need to entice suitable candidates grows, leading to higher salaries to secure these skilled workers. With the need to upskill, comes the need to spend more time away from family to obtain the required skills and knowledge, this would be a negative effect on family life.

**What will be different for you?**

If using the innovation of collaborating AI and robots as an example, the additional need to understand AI technology would be a difference. With the advancements in such technologies comes the challenge in keeping up the required knowledge, this requires further study and upskill which is where the main difference is.

**How might this affect members of your family or your friends?**

Having growth in the industry I work in can have many positive affects on my immediately family. This can provide the possibility for a higher paying job with greater job security. In my opinion having job security can have a positive effect on stress within the family.

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