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PSYC 315 Computational Thinking
Assignment 1
Automation

Automation will likely continue to take on an increasing set of manual tasks in manufacturing, packing, construction, maintenance, customer service, and agriculture through the development of machine learning algorithms. The availability of robots threatens to decrease the value of manual labor. In addition, robots are already performing many simple service tasks such as vacuuming, mopping, lawn mowing, and gutter cleaning – the market for personal and household service robots is growing by about 20 percent annually (Frey & Osborne, 2013).

Complex tasks such as strategic and tactical coordination and management tasks can become repetitive and for which human input does not add intrinsic value. Furthermore, machines that can make strategic decisions based on extensive data sets and algorithms for profound learning decrease the significance of strategic decision-making and repetitive tasks. Therefore, these automation machines can learn from their previous actions and interactions with other actors and estimate probable outcomes based on all available information.

Examples include deep-learning algorithms used to assist automated customer service, which sometimes relies on technology to complete tasks instead of human agents. Entire processes or just parts of processes can be automated. Call center automation technology often includes a combination of narrow AI, machine learning, and natural language processing (Astute Solutions, 2021). Digital age consumers expect experience that is personalized and tailored to their specific needs and expectations; automating customer service processes would mean faster response times, expanded service hours and channels, and reduced cost per interaction.

Likewise, agricultural robots are a critical tool for solving the agriculture industry's challenges. The use of drones to monitor fields and collect crop data is increasing, and agricultural robots are being developed to perform fieldwork that migrant workers have long completed. Despite popular belief, many college graduates today lack the skills agriculture will require in the future. Therefore it means that new generation farmworkers will need more advanced skills to work alongside robots. Additionally, UAVs (unmanned aerial vehicles) will continue to collect vast amounts of data in real time from farms. Massive amounts of data and machine learning regarding accurate maps of land erosion, crop health, etc., will keep the field of agriculture growing (Agricultural Robots, 2019).

Companies in many different industries are using factory automation to transform their businesses. At one Fanuc plant in Oshino, Japan, automated manufacturing to produce the next generation of industrial robots has allowed the company to reduce its human staff to only four individuals per shift. (*Hennessy Funds*. (2015)).Assembly-line jobs such as welding and spray painting were among the first to be replaced by robots(Fleming, 2020). As technology has progressed, the range of occupations that robots can now perform has grown to include increasingly sophisticated tasks such as installing windscreens in vehicles and moving big and bulky products through factories.

Automation will reduce labor expenses since, unlike their human counterparts, they can work 24 hours a day regardless of working conditions at a higher level of accuracy without quality loss. Automation does not mean a human is out of work; on the contrary, it is an essential tool of the global workforce's growth as it frees humans from the repetitive and the mundane, freeing them to apply their uniquely human talents to more subtle and complex issues.

Businesses that "put people first" will dominate the healthcare industry, teaching and programming/software developing, effectively complementing rather than replacing workers with technology. Many aspects of development will almost certainly be automated.
For computers to do anything outside the frame of programming would require a human's ability to read and react to others' needs, intentions, and emotions based on knowledge and experience through socialization. People are more likely to harness the — human psychological — character, and social competencies that are the building blocks of healthcare as technology enhances clinical care and promotes human decision-making.

While intelligent automation can make sense of data, people are still the essential part of the equation. The features of social interaction are difficult to automate (Nokelainen et al., 2018). Firstly, from the viewpoint of human experience, programmers analyze a problem; think about the issue and how to solve it effectively. Programmers break the problem up into parts and think about whether the situation should be solved; they might think about how the problem should be solved by thinking ethically about the problem rather than using some variables to get a probability about solving the problem. No doubt, with automation, there will be a reduction in cost for companies that develop software, which, in turn, means that more software can be produced in less time. However, non-technical skills that are not easy to automate and are going to be the factor that distinguishes programmers; domain expertise, creativity, better soft skills, and emotional intelligence will matter more and also set engineers apart.

There are educational tasks that are deeply connected to human meaning and the meaningful ends of education. Especially in the educational contexts, meaning-related tasks often involve cognitively demanding decision-making in an environment where social and psychological introduce uncertainty and complexity. The technological capacity required for full automation or even meaningful assistance of automation for teaching tasks is still quite far from realized(Nokelainen et al. 2018). It considers educational technology's possibilities to facilitate professional practices, such as e-learning, informal learning, and project-based learning. However, technologies, such as augmented and virtual reality appliances and wearable devices connected to the internet, can enhance human perception and experience of meaningful things in new ways. (Nokelainen et al. 2018). These practices develop academic skills, but non-academic skills, such as social-emotional skills and growth mindset and learning from experience needed in working life, are not given in a theoretical classroom.

Teaching, the Healthcare industry, and many more such fields include complex tasks for which a human adds the meaning to the outcome. Meaning of work is that human beings have specific capabilities required to live a fulfilling life within a society alongside the learning capacity including empathy, creative thinking, creativity, communication, collaboration and above all experience. These central capabilities include life, bodily health, bodily integrity, senses, imagination and thought, emotions, practical reason, affiliation, other species, play, and political and material control over one's environment. (Nokelainen et al. 2018).
Ethical decision-making and caring tasks deeply intertwined with the human experience of meaningfulness because of which perception and manipulation tasks, creative and social intelligence tasks are unlikely to be substituted by automation over the foreseeable future.

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