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OF

AGRICULTURE AND TECHNOLOGY

BIT2319 ARTIFICIAL INTELLIGENCE

ASSIGNMENT 1: GROUP 13

SECTION A: SOCIAL ECONOMIC MODELS

SECTION B: APPLICATION OF INTELLIGENCE SYSTEMS IN BUSINESS

1. **SOCIAL AND ECONOMIC MODELS OF AI.**

Advancements in computing power, theoretical understanding and large amount of data has enabled AI techniques to be an essential part of technological revolution and is helping to solve many complex problems of our daily life.

Social consequences define how technology directly impact our life from individual perspective, community and the society at large. Following are some of the social economic consequences associated with AI.

**1.Unemployment**

With the automation of processes dominating the AI field, job displacement is one of the huge consequences that AI will have. In the past decade human have relied on physical work and investing their time to earn. With the technology been in practical to a wide variety of industries, machines are performing far better and more efficient than human, hence replacing human is not an option if the business wants to survive. This brings a bigger question of what these all people will do after losing their jobs to machines.

Statistics indicate an increased need of AI skills to survive in job market.

On the brighter side, replacement of machines could finally see human doing what they like and other non-labor activities like family caring, community activities and found other new ways to help the society.

**2. Security**

With the amount of effort and investment that some of the government put in to AI research it is finally paying off. Autonomous weapons are now being developed at a rapid pace. Powerful nations are battling each other to become the leading power in autonomous weapons. From military drones, automated warfare jets, to robotic soldiers all are already in the ground field. The increase power of destruction that the technology is adding is far beyond measures. Talking about nuclear, aerospace, cybersecurity and biotechnology these are priority areas for countries national security.

**3.Singularity**

With the exponential growth of the technology, some of the AI researcher argues that the stage

in which the machines surpass human intelligence is getting near. At that point is when the progress of the technology is controlled by the machines themselves. That is the so called “Singularity” or other call its artificial super intelligence (ASI). Although this seems far distant away, but some of the technology guru like Ray Kurzweil now a chief engineer at Google predict this to happens in the next 20 to 25 years. Currently machines are trained to be intelligent in a specific area or task unlike humans which can accomplish a certain task although it’s not an area of expertise. As the AI technology grows exponentially its rather sooner than later, we start to see machine that can accomplish different task as human do and not only accomplishing the task with precision but also anticipating the coming future. The question remains whether the machines will take advantage over us or will we still have the control over those intelligent machines we build?

**3. Artificial stupidity**

With unpredictable behavior of humans, learning from them can sometimes be difficult. The data that the AI technology is using to train and learn mostly does not cover all the aspect of human behavior. Intelligence comes from learning, whether you are human or machine. Systems usually have a training phase in which they "learn" to detect the right patterns and act according to their input. Once a system is fully trained, it can then go into test phase, where it is hit with more examples and we see how it performs. Obviously, the training phase cannot cover all possible examples that a system may deal with in the real world. These systems can be fooled in ways that humans wouldn't be. For example, random dot patterns can lead a machine to “see” things that aren’t there. If we rely on AI to bring us into a new world of labor, security and efficiency, we need to ensure that the machine performs as planned, and that people can’t overpower it to use it for their own ends.

**4. Humanity**

Unlike human nature of being tired and changing mood, machines are more efficient and have a wide environment and resources of making relationships with humans. The chat bots of today not only can answer a variety of human question but also have the ability to establish emotional connection with human themselves. Sooner we are going to see more of these intelligent bots in customer services and support which means a job loss to some extent for humans who used to perform those kinds of jobs.

With the rise of artificial intelligence bot, modern human interaction is also changing. A remarkable artificial intelligent bot named Eugene Goostman won the Turing challenge for the first time. In this challenge the bot interacted with human in a text input format and the user were required to guess whether they were chatting with machine or human. The bot fooled more than half of the human raters into thinking they have been talking to their fellow human being.

This marked the milestone and the beginning of the new age in which the humans expose and interact more frequently with machines as they do with other human

**5. AI bias**

For human to be intelligent they need to learn so as do the AI systems. But the imperfect nature and of humans creates a biased environment when it comes to the dataset the models are learning from. Although the capacity and speed of processing of AI is beyond humans for now, we cannot fully trust it to be fair and neutral.

One good example could be a criminology prediction system which was observed to be bias against black people. Although the model proved to be accurate still the assessment of the prediction together with the errors produced was not assessed enough.

Here comes the question of the purpose and the impact of the technology on people’s lives. The analysis and handling of the technology needs in depth exploration of the results its produced and not only rely on the accuracy.

Handling these systems to non-expert to rely on can be more detrimental than it looks. Although the systems are building to serve our social progress the bias nature of human can still be propagated if not handled carefully.

**6. Evil genies**

With many unanswered question within the AI field today, new questions and unknowns continues to erupt as the technology progresses. The evil within the AI is not what we see in Hollywood movies of machines turning against humans, but rather is the mechanisms that the AI uses to solve the problems which we did not intended do that way. One article provided a clear understanding of this concept by an example on place. For instance, when we are asking an AI system to provide a solution to eradicate cancer in the world. After lots of computation the system gives the formula to eradicate the cancer by killing all the humans. In this example we can clearly see the machine achieves its goal efficiently but, in a way, that we did not intend. So as useful as it is the technology still needs to understand the full context of the environment in which we want to find a solution for that.

**7. Robot rights**

The art of the robots we are building is no longer focusing on electrical and mechanical functionality rather the focus is for now is how intelligent it is and how well the robot improves its behavior as its learns from the environment it is in. The initial idea of the robots was more of assisting manual works in industries and have evolved ever since. In today’s world not only the robots are in our industries, the expanded idea brought us to human like robots who can socialize and assist humans in various form. For instance, “​Sophia​” one of the recent humanoid robot developed by the Hanson robotics are now working to supplying Sophia with personality content and cognitive, linguistic, perceptual and behavioral content aimed at enabling loving interactions supportive of human self-transcendence in their joint project with the Institute for Noetic Sciences (IONS) in a project called “Loving AI”. As the technology progresses these robots are becoming more complex and life like. Another good example is the “​Spencer robot​” which assist passengers to navigate to their departure gates at the Schiphol airport. Apart from humanoid robots we also have autonomous cars. All these needs a set of rules like the humans which are being trained to be like them.

**8. Inequality**

AI technology is widening the wealth gap. This is leading to cut off of human workforce in different companies, this means the revenue will go to the fewer people. Hence AI driven companies will make all the money while fewer people will benefit. Although some people argued that the automation won’t be the source of increased unemployment, still it can destroy middle range jobs while increasing those on the low and high-end jobs. This will augment to the social inequality and amplify the gap between low and higher end job earnings. The AI startups are now benefiting from the investments as the potential of the technology is indicating its potential towards businesses. This brings the initiative for the society and their governments to create policies that will supervise and ensure equal distribution of wealth among individual to combat the increasing gap. This can range from increasing taxes to those companies and exposing more people to the technology. Future generation needs to be prepared for the future technology and current worker skills needs to be enhanced either by inventing or being creative of controlling the automation itself.

**APPLICATION OF INTELLIGENCE SYSTEMS IN BUSINESS**

**HOW BUSINESSES USE A.I. TODAY**

* Artificial intelligence is already widely used in business applications, including automation, data analytics, and natural language processing. Across industries, these three fields of AI are streamlining operations and improving efficiencies.
* **Automation** alleviates repetitive or even dangerous tasks.
* **Data analytics** provides businesses with insights which were never possible before.
* **Natural language processing** allows for intelligent search engines, helpful chatbots, and [better accessibility](https://www.ibm.com/blogs/think/2018/05/accessibility-research/) for people who are visually impaired.
* [*Harvard Business Review*](https://hbr.org/2018/07/most-of-ais-business-uses-will-be-in-two-areas)reports that AI stands to make the greatest impact in marketing services, supply chain management, and manufacturing.
* Esposito noted that there’s also opportunity to use AI in finance and banking, two sectors still reliant on antiquated processes. But applications of AI can be used across industries.
* In particular, health care, education, transportation, and waste management can all be made more efficient and effective with solutions that automate, predict, and respond when humans can’t.

**DEMYSTIFYING ARTIFICIAL INTELLIGENCE FOR BUSINESS OWNERS**

* According to Esposito, there’s a lot of misunderstanding in the business world about AI’s current capabilities and future potential. At Nexus, he and his partners work with startups and small businesses to adopt AI solutions that can streamline operations or solve problems.
* For companies looking to leverage AI, Esposito says the first step is to look at which parts of your current operations can be digitized. Rather than dreaming up a magic-bullet solution, businesses should consider existing tech that can free up resources or provide new insights.
* For instance, companies that have already digitized payroll will find that they’re collecting a lot of data that could help forecast future costs. This allows businesses to hire and operate with more predictability, as well as streamline tasks for accounting.

**BUSINESSES THAT HAVE TRANSFORMED OPERATIONS WITH A.I.**

One company that’s successfully integrated AI tech into multiple aspects of its business is Unilever, a consumer goods corporation. In addition to streamlining hiring and onboarding, AI is helping Unilever get the most out of its vast amounts of data.

1. Data informs much of what **Unilever** does, from demand forecasts to marketing analytics. The company observed that their data sources were coming from varying interfaces and APIs, according to *[Diginomica](https://diginomica.com/unilever-teams-microsoft-deliver-ai-assisted-decision-making-users/)****.*** This both hindered access and made the data unreliable.

* In response, Unilever developed its own platforms to store the data and make it easily accessible for its employees. Augmented with Microsoft’s Power BI tool, Unilever’s platform collects data from both internal and external sources. It stores the data in a universal data lake where it’s preserved to be used indefinitely for anything from business logistics to product development.

2. Amazon is another early adopter. Even before its virtual assistant Alexa was in every other home in America, Amazon was an innovator in using machine learning to optimize inventory management and delivery.

* With a fully robust, AI-empowered system in place, Amazon was able to make a successful foray into the food industry via its acquisition of Whole Foods, which now uses Amazon delivery services.

Both Unilever and Amazon are exemplary because they’re solving current problems with technology that’s already available. And they’re predicting industry disruption so they can stay ahead of the pack.

Of course, these two examples are large corporations with deep pockets. But Esposito believes that most businesses thinking about AI realistically and strategically can achieve their goals.

**Common applications of AI in business include:**

* **Security –** Sensors detect any unusual behaviour in a firm. For example, in any Safaricom shop phones are attached to sensors which send signals to the management in case a customer tampers with it.
* **Automation –** In any business, it would be more effective to automate machine to carry out business operations on their own without human intervention. For example, the use of bots in customer support has successfully enabled firms to cut costs that could be used to pay workers in such positions.
* **Fraud detection –** In banking and finance an AI software if given a very large sample of data and is trained to determine whether a transaction is valid based on the data.
* **Data analytics –** AI help the management of any business to mine and interpret data more efficiently and analyse assets, staff and customers.
* **Operational automation –** AI can be used to control robots in factories or maintain ideal temperatures through intelligent heating. In particular, health care, education, transportation, and waste management can all be made more efficient and effective with solutions that automate, predict, and respond when humans can’t.

**DEMYSTIFYING ARTIFICIAL INTELLIGENCE FOR BUSINESS OWNERS**

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* Esposito discovered early on that many business owners assume AI can do everything a person can do, and more. A better approach involves identifying specific use cases.
* For companies looking to leverage AI, Esposito says the first step is to look at which parts of your current operations can be digitized. Rather than dreaming up a magic-bullet solution, businesses should consider existing tech that can free up resources or provide new insights.
* “The low-hanging fruit is recognizing where in the value chain they can improve operations,” Esposito says. “AI doesn’t start with AI. It starts at the company level.”
* For instance, companies that have already digitized payroll will find that they’re collecting a lot of data that could help forecast future costs. This allows businesses to hire and operate with more predictability, as well as streamline tasks for accounting.