# IT Technologies (Artificial Intelligence – Machine Learning)

**What does it do? (600 words):**

Artificial intelligence (A.I) is a term that refers to the ability of machines to do tasks generally associated with human intellect such as learning, adapting, self-correction, and so on [1]. Machine learning is a subfield of artificial intelligence that allows software programs to evolve over time, improving prediction accuracy based on gathered data and, as a result, adapting their behavior to fit the surrounding environment [2].

Artificial intelligence is a very promising field with a wide range of applications. Although artificial intelligence was only discovered and studied carefully in the twentieth century, there have been several accomplishments of this technology in different fields until now.

- In the field of robotics, an A.I-enabled robot right now can detect any obstacles in its route and plan an optimal way to get to the given location. These robots may be used to transport heavy equipment in warehouses and factories as well as clean public places. Those are the tasks that would normally necessitate the participation of so many persons.

- In the field of gaming, we have an exceptional artificial intelligence named AlphaGo, a computer created to play the board game Go. AlphaGo can comprehend a human's realistic manner of playing by analyzing data from matches with different amateurs and professionals. In 2016, it surprised everyone when defeating Go Champion Lee Sedol 4-1, marking a milestone in artificial intelligence development [3].

- A.I plays a key role in data analysis. Data analysts may be able to employ AI to help them manage and analyze large databases. They use Helixa, an A.I program that provides insights into customer behavior with more accurate results [4]. These services may be used by marketers to create more complete client profiles and better-targeted marketing campaigns.

- A.I also assists in the fields of science and research. 'Eve,' an AI-based robot, is an excellent example. It discovered a component of toothpaste that can treat Malaria, a deadly illness claiming many lives in the past [5].

Big data and machine learning technologies may allow A.I. technology to advance further in the future.Big data is a broad term that refers to a variety of voluminous and high-speed digital information assets that can’t be handled with traditional methods [6]. With the advancement of big data, there will be more amount of both structured and unstructured data for computers to evaluate at a faster rate. Machine learning, on the other hand, can assist in recognizing patterns in the data, categorizing it into various groups, and translating it into useful insights.

- In the field of social media, because of the enormous number of users, there is also a large amount of data generated every day. Social media companies use A.I in tracking user’s activity, so that they can know about customer behaviors and interests based on the posts they like or the videos they watch. A.I can draw a picture of the target audience and build a solid framework for their customers, allowing businesses to make informed decisions [7]. However, data management flaws still exist in a number of situations right now. In the future, the analytic technique will grow to be more precise, allowing social media companies to learn more about their customers and make appropriate changes.

- In the healthcare sector, combining A.I. and big data would be extremely beneficial in monitoring and revealing useful patterns among vast amounts of patient data, allowing doctors to plan appropriate check-up and treatment schedules. Beth Israel is working on a mobile app that will collect data from millions of patients and aid clinicians in providing evidence-based care [8].

**What is the likely impact? (300 words):**

Artificial intelligence is used in a wide range of industries, including business, science, manufacturing, transportation, and so on, therefore its advancement has a significant impact on society.

The positive impact of A.I is the improvement in work efficiency. Humans sometimes make mistakes if they are distracted by the surrounding environment. Computers, on the other hand, are solely concerned with performing the tasks at hand. They've been trained to perform millions of calculations to finish tasks with excellent quality in less time. Furthermore, because A.I. can perform the task of many individuals, there will be a reduction in the number of employees, resulting in lower staffing costs.

The major negative impact of A.I is making some people lose their jobs. The people who are most affected are those who work in jobs that do not require them to be creative or solve ethical issues. Several jobs might be replaced by computers in the future:

+ Factory worker: most commodities have already been merchandised with A.I, so there will only be one or two supervisors who control the machine.

+ Proofreader: While editing takes a lot of time and effort, detecting grammatical errors and sentence structure can be done automatically with applications like Grammarly.

+ Driver: We now have self-driving automobiles that go at a modest speed and are aware of the best route to take to reach their destination. As per the Los Angeles Times, self-driving trucks could replace 1.7 million American truckers in the next ten years [9].

+ Security guards: With its high-definition camera, a security robot can easily investigate a building, and determine the number of persons in a certain location. It also contains sensors that can detect any suspicious activities and transmit police notifications. AI has an 84 percent possibility of completely automating this industry in the future [10].

…

**How will this affect you? (300 words):**

Artificial intelligence appears in my daily life frequently to fulfill a variety of functions. It improves the convenience and comfort of my life by allowing me to save time on regular duties.

- When I wake up in the morning, I open my iPhone using Face ID. It's essentially an A.I -based facial recognition feature that memorizes my face and records the image using 30.000 invisible dots [11]. I just let the smartphone scan my face once, and my iPhone will unlock instantly the next time it sees my face.

- When I have breakfast, I use the digital voice assistant of Apple named Siri – a form of virtual assistant driven by A.I to manage my schedule. I can check the calendars for upcoming events, set alarms to remind me to complete several tasks, play the music I am interested in, …

- When I have spare time, I usually watch Netflix. This streaming service also uses A.I in its recommendation engine. It will suggest new movies to watch based on my previous viewing history, which have similar genres or actors I admire.

My family members use A.I. applications in a variety of situations, but they are mostly unaware of it.

- Whenever entering the company, my uncle marks his attendance by using a face-recognition machine, ensuring that he comes to the office on time.

- My mom often buys products online, particularly on e-commerce sites such as Shopee, Tiki, and others. Artificial intelligence is also used by the corporations behind such platforms to handle data and recommend products to consumers, including discount programs and vouchers.

- My sister usually transfers money and pays bills using her banking account. A.I. assists her in preventing unauthorized persons from making illegal purchases with her credit card.

# REFERENCES

[1] J. N. Kok, E. J. Boers, W. A. Kosters, P. Van der Putten, and M. Poel, "Artificial intelligence: definition, trends, techniques, and cases," Artificial intelligence, vol. 1, pp. 270-299, 2009.

[2] E. Burns. “What Is Machine Learning and Why Is It Important?” SearchEnterpriseAI. <https://searchenterpriseai.techtarget.com/definition/machine-learning-ML> (accessed Dec. 7,2021).

[3] F.-Y. Wang et al., "Where does AlphaGo go: From church-turing thesis to AlphaGo thesis and beyond," IEEE/CAA Journal of Automatica Sinica, vol. 3, no. 2, pp. 113-120, 2016.

[4] Priyadarshini College Of Engineering. “Why you should become an AI professional.” Priyadarshini College of Engineering | PCE Nagpur <https://www.pcenagpur.edu.in/artificial-intelligence> (accessed Dec. 7,2021).

[5] Verdict. “AI robot helps discover ingredient for anti-malarial drug.” Pharmaceutical Technology <https://www.pharmaceutical-technology.com/comment/ai-robot-helps-discover-ingredient-anti-malarial-drug/> (accessed Dec. 7,2021).

[6] W. L. Chang and N. Grady, "Nist big data interoperability framework: Volume 1, big data definitions," 2015.

[7] A. Bechmann and G. C. Bowker, "Unsupervised by any other name: Hidden layers of knowledge production in artificial intelligence on social media," Big Data & Society, vol. 6, no. 1, p. 2053951718819569, 2019.

[8] J. Torous, J. Nicholas, M. E. Larsen, J. Firth, and H. Christensen, "Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements," Evidence-based mental health, vol. 21, no. 3, pp. 116-119, 2018.

[9] N. Kitroeff. “Robots could replace 1.7 million American truckers in the next decade.” Los Angeles Times. <https://www.latimes.com/projects/la-fi-automated-trucks-labor-20160924/> (accessed Dec. 7,2021).

[10] C. B. Frey and M. A. Osborne, "The future of employment: How susceptible are jobs to computerisation?," Technological forecasting & social change, vol. 114, no. January, pp. 254-280, 2017.

[11] S. Hollister. “iPhone X: How Face ID works.” CNET <https://www.cnet.com/tech/mobile/apple-face-id-truedepth-how-it-works/> (accessed Dec. 7,2021).