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Dramatic improvements in performance, accuracy, and confidence justify why the next generation of technology will stem from research done in artificial intelligence, specifically machine learning. Deep learning, a subsidiary of machine learning, focuses on learning data representations rather than developing algorithms based on specific tasks. Both deep learning and machine learning have their practical limitations and areas that they specialize in. Deep learning breaks down a complex problem into smaller, simpler patterns a computer can recognize in order to recognize the type of entity inputted to the algorithm. Additionally, another factor when giving machines the ability to make life-changing decisions is considering the responsibility and morality of these machines. The research suggests that artificially intelligent machines can be used in many different fields and provide improvements in performance and certainty based on a sufficient amount of training data and time required to process the information.

In Don Monroe's "Deep Learning Takes on Translation", he elaborates on the topic of using computer vision and Big Data to produce astonishing results in translating text between languages. With the help of continuous improvements in hardware and an abundant amount of data, machine translation is becoming more accurate. Advances in speech analysis and image recognition are possible with data-intensive machine learning techniques. However, one of the challenges was how to measure the quality of a translation. There are many intricacies each language has that are challenging to interpret from one language to another. The research discusses how they were using a bilingual evaluation understudy, a temporary solution that

concluded with unreliable findings compared to human evaluators, in order to determine the precision of the translation. One of the first applications of deep learning started with language translation since there were tons of textual data online that were open source. As time passed, other fields of study adapted machine learning algorithms in order to obtain more accurate results, quicker. As a follow up for this research, it would be best to find a method where they could evaluate the accuracy of a translation without relying on a human to review the data.

The article, "Applying Machine Learning to Facilitate Autism Diagnostics: Pitfalls and Promises", written by Daniel Bone et al. (researchers at Signal Analysis & Interpretation Laboratory at the University of Southern California), explains how machine learning enhances diagnostics in autism spectrum disorder by processing signals. The research discusses how machine learning still is a relatively new technology that is not clinically proven to be effective and can lead to uncertain and misleading results. Their research focuses on reproducing results from other studies that claim that this technology will greatly reduce the diagnostic time of autism, while using a larger sample size and more reliable data. After conducting the study, their results were unsuccessful in replicating equivalent findings as prior research has claimed. Considering their discovery, this inaccuracy can be applied to various artificial intelligence projects that consist of inadequate datasets. One of the weaknesses of computer vision is the necessity of an incredibly extensive amount of information. Modern-day deep learning algorithms are not suitable in fields where knowledge is scarce.

The next article, "Artificial Intelligence and Machine Learning in Radiology: Opportunities, Challenges, Pitfalls, and Criteria for Success", written by James H. Thrall et al., discusses the successes of utilizing deep learning algorithms in Radiology. The technology

provides professionals in the field an increase in diagnostic confidence, accelerated analyses, and a quality of life improvement. At first, it may seem that Radiologists might be losing their jobs in the field to machinery, but instead, with the collaboration of artificial intelligence applications, they will accomplish many feats. Contrasting from the previous article, deep learning techniques are more effective when handling tasks that can be broken down into small patterns that a computer can recognize with a large enough dataset. In the case of diagnosing autism, patterns are still unclear to machine learning algorithms, however, radiology relies on images, where patterns can be recognized based on training data that differentiate between benign and malignant. There are more purposes of machine learning other than clinically.

On the subject of ethicality, the article "Responsibility and the Moral Phenomenology of Using Self-Driving Cars", written by Mark Coeckelbergh (Philosophy of Technology professor at the University of Vienna), discusses numerous responsibilities that are attached with the use autonomous vehicles. The research distinguishes two types of responsibilities, responsibility for what one person does, and responsibility to others. Both are applied when they use a self-driving vehicle in practice. By replacing the human behind the wheel of the car, they put the responsibility up to the artificial intelligence driving the vehicle. The research concludes that self-driving cars are responsible for objective risks, which include intelligence, behavior, and the ethical decisions calculated while actively operating the vehicle. This consists of its computed judgement when handling accidents that may occur on the road. Although the amount of accidents will decrease due to the technology, when an autonomous vehicle is involved in an accident, it will receive harsher consequences due to the responsibility of the vehicle to predict that the event will occur and avoid it. Reflecting on this article, it explains the intricacies of the

responsibility of self-driving cars very well. The article is meant for someone who has an interest in the impact of driverless vehicles from a philosophical point of view and how moral consequences change for machine operation rather than human operation. Moreover, the article does not only pertain to driverless vehicles. These cars use computer vision in order to process decisions the vehicle will make given a circumstance. The moral responsibility and ethicality carries over to any type of machine utilizing this technology, especially those that will influence decisions that could negatively affect humans.

At this moment, people are abusing object-based forgery with the many advancements in computer vision. With the help of the artificial intelligence breakthrough, Ye Yao et al. discuss their discoveries in "Deep Learning for Detection of Object-Based Forgery in Advanced Video". Their approach to combat forgery involves a convolutional neural network, which is different from typical neural networks used in computer vision, such that the video undergoes multiple layers of preprocessing frame by frame. The combination of utilizing a convolutional neural network and preprocessing layers produced outstanding results. The research surrounding computer vision artificial intelligence has proven to be adaptable and easily integratable to many different fields of study. As described by the previous articles, this ranges from self-driving cars to medical implications. Presently, experimentation in deep learning is an upcoming new technology that needs more researchers to assimilate into our society. One advantage of applying artificial intelligence is that it can be applied to topics that already contain large databases of information, where it can utilize its pattern-based recognition system.

In the final analysis of these five articles, artificial intelligence proves itself to be promising, but is remarkably restricted by the amount of data required to receive an accurate

conclusion from the machine. The applications of deep learning has introduced an additional concern for the responsibility of the machines to consistently produce precise results. The research suggests that artificially intelligent machines are highly adaptable and can be easily integrated as long as the model has a sufficient amount of training data and time. Impressive improvements in efficiency, precision, and confidence validate the next generation of technology to be artificial intelligence. Further research can be done in fields such as, geology and oncology, which require an enormous amount of data in order for artificially intelligent machines to produce conclusive findings.

Works Cited

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