Role of Artificial Intelligence in Future Technologies

Current Impact of AI on various technology streams

AI has already made inroads into various sectors of technology, in this essay we shall be going over medical technology, Autonomous Driving Systems, and Finance.

In medical technology AI can be used to aid the doctors in diagnosis generation, stratifying the disease, reducing medical errors and increasing overall productivity.[1]Healthcare companies such as IdxEyediagnosis are already using AI to detect diabetic retinopathy to prevent blindness.[2]

AI for vehicles(AIV) is being used to build self-driving cars. Cars such as Audi A8 use AI (Audi AI) to automate the driving upto to speeds nearing 60 kmph, also offering the functionality of parking.[3]However, at present with deep learning technologies at core Artificial Normal Intelligence(ANI) has been able to achieve assistant driving and not completely autonomous driving.[4]

In the field of Financial Tech(Fintech) AI has enabled robo-advisors, a class of financial services which depending on the client's risk appetite allocate the client's money into a variety of financial products(stocks, bonds, etc) using AI for optimality.[5] Prominent investment advisory firms such as Vanguard are providing portfolio management services via robo-advisors. [6]

Potential use cases of AI in these streams in the future

AI is expected to play a more dominant role in the field of medical technology than merely assisting doctors in useful inferences. In the form of machine learning, it is the main force behind the development of precision medicine. With rapid advances in image processing, the function of examining radiology images might be completely through machines in the future. Speech recognition will be further incorporated for tasks like patient communication and capture of clinical notes.[7] AI will extract the most relevant information from the patient's electronic footprint, which will help in developing more 'personalised' medicine rather than

having a one size fits all approach. As AI scales better it can be used in preventative medicine, for example, it could proactively suggest consultations when it determines that a patient is at risk of developing diabetic complications.[8]

As AI progresses from ANI to Artificial Generalised Intelligence(AGI) which is based on the brain-like conception and then to Artificial Super Intelligence(ASI) which is human-machine based advanced auxiliary driving and completely autonomous driving are bound to be possible in the future. As the concept of Connected Vehicles springs up where the data of each vehicle is shared via a cloud network with the other vehicles in the same network AI will be needed on both the individual vehicle and also on the cloud. With progression in the processing power of AI systems they can be used to process the real-time data flowing in and make decisions to avoid traffic, accidents and also energy-efficient decisions.[4]

In Fintech, AI could help in better collection and analysis of market data by participants. This would lead to a more informed group participants, hence more market stability. Robo advisors would help people to invest in unknown markets hence diversifying their portfolios. Using AI for credit scoring and assigning optimal points to FinTech lenders, more funds can be made available for Small-Medium Enterprises. AI would help in the analysis of big data providing meaningful characteristics for each customer thus helping firms to design well-targeted services. [9] AI could also be potentially used in fraud detection by banks and lenders to prevent loan defaulters. Combined with Big Data AI can be used to process real-time data and detect fraudulent signals much earlier than traditional systems.[5]

In general, AI would have a more individual-centered approach while being more hands-on.

Risks involved with AI

The full-scale implementation of AI in the healthcare industry is hindered by ethical challenges such as the algorithms may have human biases when making decisions. Given that healthcare delivery already differs from race to race, the diagnosis done by AI systems might inherently have a bias for certain genetic populations upon which it is trained insufficiently.[10] AI systems will have to use extensive public data to train it's models, giving rise to privacy and cyber-security issues.[1] Transparency is another issue that crops up, consider the diagnosis of a complex deep learning algorithm stating that a patient has cancer. Both the algorithm and physician would have a hard time providing a lucid reason to the patient. If the AI system were to make a mistake in diagnosis it would be hard to ascertain who is to be held accountable.[7]

Given the nature of Autonomous driving cars where both hardware and software systems are in play, accountability is hard to establish when a crash happens whether it was the AI's decision making fault or whether it did not have the supporting hardware for a particular manoeuvre which might have saved the day.[11] Ai is also posed with moral issues when taking a critical decision during driving, consider the "moral machine" experiment where the

car has to decide between sparing a younger group of people or older. The decision would be based on the training and data the AI system has been given and would be legal in some regions but illegal in the others.[12]

If AI was to be used in Fintech without giving feedback or sufficient data it might introduce new risks in the system. For example, the robo advisors when providing stress points to investors may not be able to give all stress points if stress testing is not done with all data points in the time series. [9]

Summing up, AI in the future will have to address issues of Bias, accountability, and morality.

Conclusion

AI is bound to play a more dominant role in the future technology streams with the underlying theme being that it will cater to the specific needs of each user utilising the data collected on the individual and also on the public in general, it could completely personalise the medical, financial and driving sector. However, as with any new technology it carries risks such as confidentiality, accountability, accuracy and moral risks. How the practitioners implement the AI will determine the good/bad it will do for humanity.

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