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Original Article

Impact of AI/ML on Job Market and Skills Set and Health Industry

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Abstract: *Artificial Intelligence (AI) and Machine Learning (ML) are the next wave technologies which changed industries around the world. The following paper examines how they have had a massive impact on the labor market, employment demands and health sector. From a look at trends and an eye on the future, the paper will try to give you a full picture of the opportunities and challenges of AI and ML. As we all witnessed over the last few years Artificial Intelligence and Machine Learning has been applied to many industries which is having profound effect on the market, the skill set and the health sector. This paper explores the role that AI/ML is playing in such domains, in this case in healthcare. In this article, we look at applications of AI/ML to remote healthcare, medical diagnosis, and hospital services. Also it covers the job market effects of AI/ML, with rising demand for AI skills and the creation of new job fields, as well as the worries of workers' displacement from automation. Finally, the paper suggests continued education and training programs to equip workers with the skills to make it in the AI-powered economy, especially in the healthcare sector where the adoption of these technologies will likely grow further over the coming years.*

Keywords: *AI/ML, Healthcare, Skills Set, Job Market, Future of AI.*

I. INTRODUCTION

AI and ML is branch of computer science where you're designing a system that learns from the data. They have taken off in all fields from automated mundane operations to decision making. The paper explains how these technologies shift the employment equation, reshape the skillset, and change healthcare. Artificial Intelligence and Machine Learning are fast changing the industry from the job market to healthcare industry [1]. This study will investigate the impact of these technologies in 2022 in terms of job market, talent and the health sector. Since AI/ML has penetrated many industries, jobs are being altered and a few jobs have gone away, and others are created [2][1]. Healthcare in particular has been at the vanguard of this technological advance and has applied AI/ML to extend remote healthcare services, medical diagnostics and hospital systems.

Healthcare has undergone a major change over the past few years and AI and machine learning were key to that. These new technologies could change every aspect of hospital work, from clinical decision making to diagnostics to patient care. [10] With the shift to 2022, AI and ML are taking an even greater visibility into hospitals, there are positives as well as negatives.

A. AI impact on Job market

All companies are fighting for AI talent because the market for machine learning and AI skills is growing 6x faster than all other roles. But with the deployment of AI/ML has also been a digitization of work, and displacement of some employees. One of the biggest industries affected by the advent of AI/ML is healthcare. Hospitals and clinics are using them to provide better care, more accurate medical diagnosis, and improve the efficiency of hospital systems. The car industry too is in a race to find AI talent to develop self-driving technologies.

The emergence of AI/ML also had implications for the workforce and the skillsets needed for specific jobs. All kinds of industries are racing for AI talent because the number of machines learning and AI skills needed is six times higher than the number of jobs. The result is a change in the skills employers look for — more data analysis, programming and problem-solving abilities. Meanwhile, AI/ML has also been the automation of many tasks, and some employees were being outsourced. But it's also brought new jobs: AI/ML engineers, data scientists, algorithmic engineers. To adapt to these changes, employees will need to develop a diverse set of skills, including technical expertise, creativity, and emotional intelligence.

B. AI on future skill set

The influence of AI/ML on the workforce and the skillset will only get more sophisticated over the next several years. The more that AI/ML becomes part of a number of different industries, the more that will be required for other skill sets like

informatics. ed. and training will need to adapt to the labor market so that workers have the skill set they need to compete in an AI economy.There's also the risk that introducing AI systems could be utilized to rationalize hiring less-talented employees, a liability if the technology breaks and the employees can't identify mistakes or perform tasks on their own without computing support. As such, colleges and universities need to train graduates for any dynamic shifts to the global graduate labor market resulting from AI/ML. [4]

To adapt to this changing job market and AI/ML based skill sets, education and training programs must change too. [4] [5] Universities and other institutions of higher learning need to train graduates for whatever dynamic transitions the global graduate labor market may face as a result of these technologies. It may be in the form of teaching more AI/ML in medical and other professional curriculums and offering opportunities for students to gain competencies in such fields as data analysis, programming, and problem solving. Further professional training and retraining could be required, in order for workers to keep up with the job market and technological shifts.

C. Drawback of AI

While there are many good things that have come from bringing AI/ML into the healthcare field, there are also some potentially bad ones. One fear is that AI-powered tools will breed new prejudices or compound existing inequalities in care. Algorithm models will make erroneous or discriminatory choices if the data on which they are trained are not representative of the general population. Then there's the issue of patient privacy and data security. When patients' privacy is not protected, then adverse effects including discrimination in employment and higher costs of chronic care are more likely to happen [4].

D. Ethics in AI and ML

There are also ethical issues in the use of AI and ML in the healthcare sector. The first is that these technologies may endanger privacy and patient choice. With AI tools becoming ever more sophisticated, it is possible that they might be used to decide medically without patient input or consent. [7] Then too, is the question of openness and accountability in AI processes. These technologies are typically "black boxes" — they are not visible to doctors or patients to see how decisions are being made. Healthcare institutions need strong governance structures to address these ethical concerns and help to make sure AI/ML technologies are developed and used in ways that support ethical values (fairness, transparency, accountability). One of the biggest issues is AI's emotional and social implications in healthcare. And as they get more sophisticated, AI-powered healthcare will potentially dehumanize the patient and destroy the sense of emotion between patient and doctor.

E. Government regulation of AI and ML

The governments in many countries are now starting to see the value of regulating AI and ML, especially in the medical field. Many countries have already passed or are developing laws that aim to solve the moral and privacy issues that surround the use of such technologies.In the European Union, for instance, the General Data Protection Regulation (GDPR) makes rules on the use of AI and data processing, which include transparency, accountability and non-discrimination. In the US, even the Food and Drug Administration has published guidance regarding AI-enabled medical devices. [4] [5]With AI/ML entering healthcare, it will be essential for policymakers to partner with physicians, tech firms and other stakeholders to ensure that a holistic regulatory framework is created to make sure these technologies are being used responsibly and ethically.

II. HUMAN QUOTIENT IN AI/ML

Even with AI and ML advancements, we need more workers with technical knowledge but also with human capacities that computers are not able to adequately control, like creativity, empathy and problem solving [3]. Healthcare for example, uses AI to improve remote healthcare infrastructure, and auto companies are fighting over AI talent to develop self-driving vehicles. The machine learning and AI skills needed in finance are growing at 6x the rate of other jobs. [1]

A. AI/ML in healthcare

AI/ML integrations have revolutionized healthcare; it's already used to augment remote healthcare, to enhance medical diagnostics, and to help hospitals run more efficiently. AI-based solutions, for example, can help doctors make better diagnoses, resulting in better patient care. [3]It is also possible to employ AI/ML algorithms on a large data-set — from medical images to patient charts — to detect trends and make clinical-informed decisions based on these findings. Furthermore, AI-based chatbots and virtual assistants are also deployed to offer personalized medical guidance and assistance to the patients to enhance the patient experience. The advent of AI/ML in healthcare has not been free from anxieties about the patient-provider interaction, either. Some fear that medical AI will put a number of doctors at risk of losing skills in diagnostic skills and critical reasoning, or

of losing their jobs or their salaries. But all reports report increases in patient-provider trust. AI-based tools will provide personalized healthcare recommendations and guidance for patients, freeing up healthcare providers to concentrate on the human side of care.

Figure 1: AI in Healthcare

Healthcare applications of AI/ML come with certain ethical concerns: data privacy, transparency and algorithmic decision-making bias. Healthcare entities will have to build strong data governance mechanisms, make AI/ML algorithms transparent, and involve multiple parties in the design and implementation of these technologies to mitigate these issues.

As well as for automating all of the activities at hospitals (patient scheduling, resource allocation, supply chain management, and administrative), AI and ML are being applied. Using large quantities of data, AI systems can help identify the areas that can be optimized, workflows optimized, and expenses cut, which in turn leads to greater operational efficiencies and cost savings for the hospital.

B. Role of AI in clinical decision making

In hospitals, one of the biggest use cases for AI is helping clinicians to make better clinical decisions. AI can mine huge volumes of data – patients' history, lab results and scans – to discern trends and make treatment suggestions. It can cause diseases to be caught earlier, better care rendered, and a more effective use of health care resources. [11]. The future of medicine is being diagnosed by AI powered diagnostic tools at a rate that's quickly changing the way hospitals do it. These machines can read medical scans – X-rays, CT scans, MRI scans – at incredible speeds and resolution, and can sometimes outperform human professionals on some tasks. This can mean early detection of illness, shorter wait times, and more customized treatment.

C. AI/ML impact on health Insurance

AI and ML use at the hospital could have huge consequences for healthcare and insurance. The AI-based systems can also be more efficient in the allocation of resources, administration cost and treatment success, saving money for both hospitals and patients. Further, AI-powered personalized medicine and preventive care plans could ease overall strain on the healthcare system, meaning lower premiums and easier access for all.

Hospital adoption of AI and ML could have enormous impact on healthcare cost and insurance [12]. The AI enabled systems can better use resources, reduce administrative costs and enhance treatment outcomes which in turn will save hospital and patient costs [12]. And AI based personalized medicine and prevention can also reduce the overall demand on the healthcare system, which can in turn decrease premiums and ensure access to care for all. AI/ML in hospitals can transform the medical world — from clinical decision making and medical diagnosis, to hospital efficiencies and healthcare expenditures. But the effective and ethical use of these technologies comes with key problems to deal with – data privacy, transparency, keeping the human side of healthcare. With AI and ML threatening to take over healthcare, it is essential that ethical considerations be given as the technologies emerge and are built to complement, not replace, the care and kindness upon which the medical profession is built.

D. AI/ML in Medical Jobs

Besides clinical decision making and medical diagnostics, AI and ML are also changing the professions of physicians and pharmacists. Chatbots powered by AI, for example, can help patients regulate their health, offer tailored support and advice, and even triage medical issues. Furthermore, AI is being applied in the business of pharmacy to automate processes like medication dispensing, stock control, and adverse drug reaction reporting. The COVID-19 pandemic has accelerated telemedicine and remote patient monitoring, and AI and ML are at the forefront of both. Artificially intelligent chatbots and virtual assistants can also give

medical antecedent guidance, being the first point of contact for patients in far-flung places. AI and ML also are changing the professions of doctors and pharmacists. Chatbots powered by AI, for example, can help patients stay on track, offer individual guidance and support, and even diagnose conditions.

III. CHALLENGES AND LIMITATION

The advantages of AI and ML in hospitals are obvious but so too are the major drawbacks and constraints. Privacy and security of data is the biggest one. Hospitals store valuable patient data, and the deployment of AI makes it questionable whether there will be any data protection or security breaches. It's another problem that some AI models are not transparent or interpretable, which might hinder clinicians in appreciating the rationale of the systems' recommendations or decisions. Second, AI and ML in hospitals is very costly to implement successfully, both in terms of infrastructure, training and maintenance, which is often an obstacle for resources-poor healthcare providers.

A. Literature Review

The sources reviewed in this paper provide a comprehensive understanding of the impact of AI/ML on the job market, skills set, and the healthcare industry. The sources highlight the transformative role of AI/ML in healthcare, including its impact on clinical decision-making, hospital operations, medical diagnostics, and patient care. The sources also discuss the growing demand for AI/ML-related skills in the job market, with the healthcare industry being one of the sectors leading the way in the integration of these technologies. [1] [4] It outlines the state of AI in healthcare currently from research achievements to industry applications and notes the significance of AI in moving healthcare away from a dispersed, paper-based and manual process into an integrated, electronic and automated system. [12]

B. Result

In our research for this article, several things stand out:As AI/ML has penetrated every industry, job market is transforming with some jobs being redundant and others being replaced.The medical sector has been the leader in AI/ML revolution, and these technologies are helping remote healthcare, medical diagnostics and hospital operations run more efficiently.Machine learning and AI-related skill shortages are 6 times larger than other job categories and that means what employers need is changing.As industries have been transformed by the digital revolution, there is a skill shortage: a demand rather than a supply of people with technical knowledge, but also in areas that computers are not able to quite grasp, like creativity and empathy.

IV. CONCLUSION

The application of AI/ML to the job market and the healthcare sector has been profound. For one thing, AI/ML can automate processes, boost outcomes, and make healthcare systems more efficient. But AI/ML can be just as problematic for patient privacy, data security, and inclusion of biases in medical decision making. Among the biggest challenges for the health care industry is how to build a workforce that can bridge clinical and technical capabilities. In a world that increasingly relies on AI/ML, healthcare providers will have to be equipped not only with expert medical skills, but also with expertise in using these tools to help patients get better care.AI/ML has been a disruptive force in 2022 in both the job market and the health care sector. All of these technologies have created new jobs in which positions have become obsolete and others have been created. Healthcare has dominated this technological revolution by using AI/ML to help patients receive better care, diagnostics and hospital efficiency. But the digital transformation has also created a skills shortage, in which there is an excess of labor with technical knowledge and skill set that computers are unable to learn. With AI/ML on a continuous journey, organizations and individuals will need to keep up with the changes and build the skills required to succeed in it.

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