AI Application (Healthcare Sector) in Nepal

AI Application Domain: Scope, Challenges and Opportunities:

Artificial Intelligence refers to computer systems that models intelligent human behavior like learning, thinking and reasoning abilities. Simply, it is the science and engineering of creating intelligent machines. With the rapid advancements of AI and other technologies in various sectors, the healthcare sector is no exception. From managing Electronic Health Records (EHR) to advanced robotic surgery arm, AI is helping to increase efficiency in disease diagnosis, drug discovery and reducing errors during complicated health procedures.

Challenges and Opportunities:

These intelligent systems completely rely on the data they are trained upon. One of the biggest challenges not only in the context of Nepal but worldwide is the inability to collect large datasets with accuracy and credibility. Human Resource Gaps, Technical Limitations are followed by the Geographical Barriers which makes it difficult for maintenance of digital infrastructure necessary for AI deployment. Managing Electronic Health Records has just been started in Nepal and only carried out by fewer health institutions. The knowledge of these AI systems is a setback for, there needs to be a separate manpower for managing AI related stuffs, for this AI expertise to solve Nepal's real problems need to be prepared at full pace. Moreover, the accuracy of algorithms along with its transparency due to black box mechanism is also a concern. Not only this, Patient safety is a critical concern, and the AI systems do not promise perfect accuracy in doing treatments and surgeries, also the Human interpretation of the decisions made by AI may stand out to be different in various scenarios. Furthermore, Data Privacy is there, and the big question arises on who is going to take the accountability of the decisions and the tasks these AI systems will do after rigorous testing and tireless improvements.

On the other hand, These AI systems brings to the table a bucket full of opportunities.AI-powered Health platforms bridges the gap between urban medical expertise and rural patients assisting them with increased access to high quality health care and monitoring reducing financial burdens and cost effectiveness. They improve efficiency and productivity reducing the error rates in the healthcare. Not only this, with AI in action, Personalize Healthcare management and treatment system can be built.AI once deployed assists in earlier detection of illness, better disease prediction and personalized treatment plans improving healthcare. Effective Diagnosis of the disease along with predictive analysis can be done for the future risks and health problems.AI is changing healthcare in Nepal by making it easier for people in remote areas to get medical help through telemedicine facilities, helping doctors make decisions and making better treatment planning, and improving better disease diagnostics, drug discovery, patients monitoring and personalized healthcare. Nevertheless, AI/ML systems help in driving research in drug discovery, early and better disease diagnosis and classification advancing healthcare innovation in Nepal.

Possible Risks and Risk Mitigation Strategies:

The main risk while dealing with these AI/ML system is the Data Security and Privacy Concern. Patients may be vulnerable to even death threats if their critical health data records get leaked. Someone has to be accountable of the decision these systems are going to make once they are fully in production. These are just technical systems at the end of the day, and they can absolutely make errors, it will be brutal and unfair to imagine the misdiagnosis of a life taking disease, or a robotic surgery with one mistake where someone's life is at stake. With the increment in the AI systems for everything, the whole essence of healthcare professionals may be at risk, they may be ignorant of the human decisions they must make alongside AI, and their clinical and health knowledge if unused ,their profession becomes meaningless .Also, it's the data that these systems get trained upon on the basis of which they make these responsible decisions, any biasness and misinformation in the data it engulfs may lead to extreme health scenarios, the patient's life shall be at risk because of inaccurate data and inefficient AI algorithms.

To better not keep own's life at stake, one must advocate the human-computer smooth and seamless interactions. The decisions these perfect and non-accountable AI systems make should once be cross-checked by the healthcare professionals proficient and expert in their field. There should be proper and managed AI laws, policies and regulatory frameworks for building, deploying and managing these systems. Data privacy and Security is to be maintained winning the trust of patients and institutions responsible for creating these AI systems. All the healthcare associated individuals must be trained and aware about AI and its possibilities, challenges, the risks and endless opportunities it brings, and about Cybersecurity and ethical AI considerations.

Job Replacement Scenario and Dealing with Unemployment:

AI can excel at repetitive tasks, especially in healthcare, jobs like data entry, transcript and billing, administrative work may be replaced but alongside endless job opportunities will also be created. Jobs like AI system managements, Data Analysis, Remote Care Co-ordination, etc. will be created. For the unemployed ones who lose their jobs, they either can be upskilled to emphasize on AI tools and can work for new jobs that AI has to offer. But healthcare professionals with brilliant expertise won't be replaced, instead they will be assisted with AI. Humans will always be required for AI systems won't be there for empathy, critical thinking and complex decision making.

Governmental Role and Social Impact:

The Government is responsible for designing and crafting the National AI policies and regulations ensuring data privacy and security, accountability and transparency, societal and ethical considerations. It has to invest of building AI infrastructures and work together with public and private organizations and companies in building AI expertise professionals. The government must be open to research and innovation with AI not only in the healthcare sector but all the sectors.

In the society, the urban-rural healthcare gap shall be reduced with this system effectively being implemented. There will be improved healthcare outcomes reducing death rates and longer life with personalized healthcare treatment and management. There still raises data privacy threats and lack of patient trust if the data are not managed ethically. Some jobs will be replaced in compensation for which a bunch of new jobs shall also be created.

Summary:

AI in Nepal's healthcare sector makes healthcare facilities and services accessible and cost-effective, improves efficiency and productivity and reduces mortality. Also, it opens a new paradigm of research and innovation using AI in disease diagnostics, drug discovery, personalized healthcare treatment system.

References:

1.Alexander van Teijlingen, Tell Tuttle, Hamid Bouchachia, Brijesh Sathian, Edwin van Teijlingen Artificial Intelligence and Health in Nepal

2. Pathiyil Ravi Shankar Artificial intelligence in healthcare in Nepal

3.Izere Salomon Artificial intelligence in medicine: advantages and disadvantages for today and the future

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