THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE HEALTH CARE INDUSTRY AND ITS TOOLS

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ABSTRACT

Without   Artificial   Intelligence   we could not imagine the medical industry. Because if we want to diagnose a Medical Report without Artificial Intelligence. It will take lot of Manual effort to diagnose the Medical Reports.   Medical artificial intelligence (medical AI) mainly uses computer techniques to achieve clinical diagnoses and recommend treatments. AI has the ability of detecting meaningful relationships in a dataset and   has   been widely used in many medical situations to analyze, treat, and estimate the results.

Key words: Artificial Intelligence, Health care, AI tools.

INTRODUCTION

AI in medicine refers to the use of artificial intelligence technology / computerized processes in the diagnosis and healing of patients who require care. Analysis and treatment may seem like simple steps, there are many other related processes that must take place in order for a patient to be properly taken care of, for example:

- Gathering of data through diagnosis and examinations

- Dealing out and analyzing results

- Using numerous sources of data to come to an accurate diagnosis

- Determining an suitable treatment method

- Preparing and directing the chosen cure method

- Patient observing

- Aftercare, follow-up appointments etc.

- Using AI to decrease errors

- Analytic errors account for 60% of all therapeutic errors and an assessed 40,000 to 80,000 deaths each year. As AI can deal more accurate diagnostics, there is always a chance that it can also make faults, which causes companies to hesitate about adopting AI in diagnosis.

- In the field of medicine therapeutic diagnosis is very important area wrong discovery may lead to death. So medical judgment should be more accurate than the findings are more accurate. So AI is helping to find the illnesses more precisely. Many devices are helping to

detect the diseases more precisely. Healthcare applications are trained using data's like previous history, report broadcast and clinical reports and Physical examinations.

How machines learn to diagnose

AI algorithms can able to learn like a physics using previous history or the examine results. AI training algorithms need lot of previous history reports to learn about the disease pattern. AI algorithms are able to read the previous digital image related to the disease. Malignance can spot easily using Scan reports. Advance prediction can be possible in the Cardiac arrest cases using MRI digital images. Diabetic retinopathy can be easily predicted using retinal images. So vision loss can be avoided.
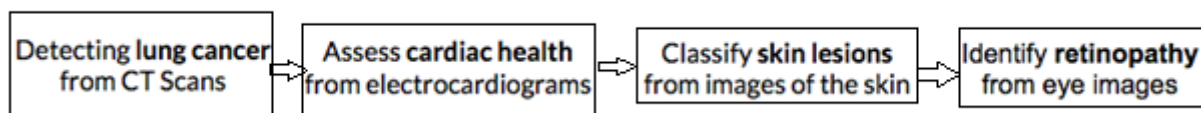
Figure 1: Machines Learning Process

There is plenty of medical data available in these cases, algorithms are becoming just as good at diagnostics as the medics. The difference is the algorithm can easily find the solution within few seconds, this can be implemented throughout the world , this technique will help to diagnose more accurately than the manual diagnosis and this setup can develop with low cost. This will act like an expert physician to diagnose the disease more precisely.

Artificial Intelligence influence in Medical Industry

Patient Facts and Analysis:

In the medical field like Malignant analysis AI's contribution is more. Malignant cells can be detected using **biopsy**. A **biopsy** test is a way in which the doctor take out a sample of tissue. A pathologist looks at the sample under anoptical microscope and runs other tests to see if the tissue is malignant. This task is a very monotonous one to diagnose from the large number of cells. The result may be vary based on the human'sskill. But the same test can be done using Artificial Intelligence can give better results. In this AI method Malignant and Benign cells were inserted as a Training set to the AI Model.

Throughout this training period the AI model can get the knowledge about the Benign and Malignant cells. After getting the previous trained knowledge now the AI model is ready to find Malignant cells more precisely than the human being. The result will be more accurate in the AI model.

Hospital Administration

In the Hospital administration field AI s involvement is more. In the Hospital Industry lot of AI related predictive models were designed so for.

This will reduce the cost of treatment. Lot of pre diagnostic models were designed so for to improvise the diagnostic result and reducing time constraints. This will helps to improve the

survival rate and reduce the mortality rate. And also its helps to reduce the medical cost based on fast prediction.
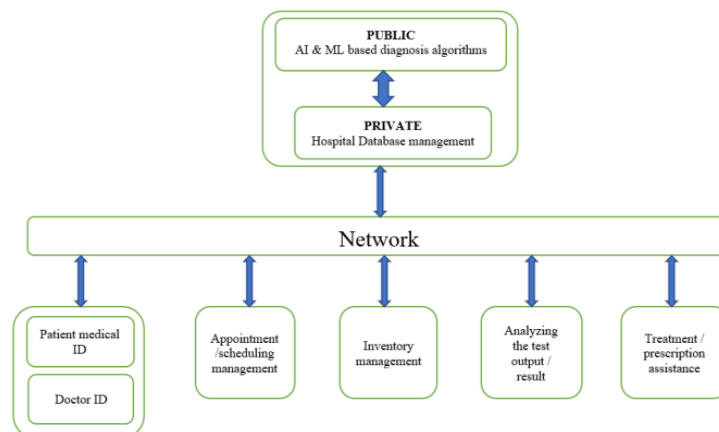
Figure 2: Hospital Administration

Medical Image processing and Prediction:

In the medical field lots of Image will be produced from Scan, MRI, and more. In the large volume of data preprocessing and diagnosing and extracting insights using machine learning is a very tedious process. Handling this large volume of data is very hard. After storing this large volume of data Analyzing is also very tough .If we want find a malignant cell from the large volume of cells in the primary level is very tough. But the Predictive models can produce better accuracy. So without this Artificial Intelligence model we couldn't imagine the medical field
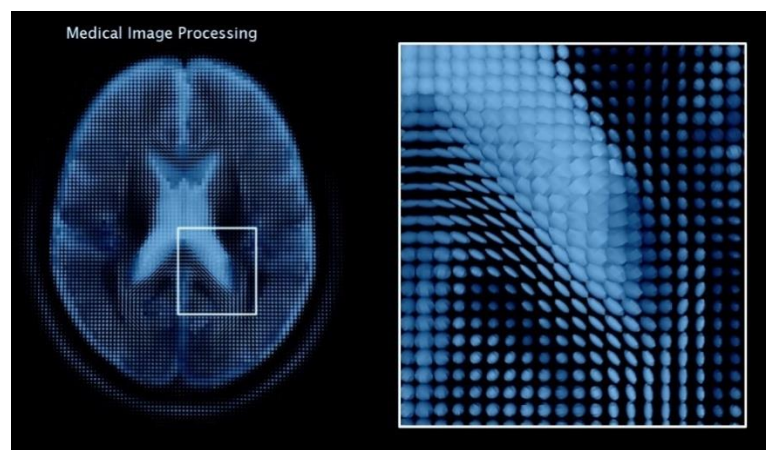
Figure 3: Medical Image Processing prediction in Medicine

Artificial Intelligence in MRI- Scan: An upcoming AI technique is called Automap this will help us to get higher quality MRI data using less radiation time. This will help our patients to reduce radiation time through this we can avoid side effects from radiation. Because we can inject less radiation to the patients through this we can capture small amount of data using this small amount of data we can get good quality detailed picture using Automap.

Automap is a technique it provide instantaneous image rebuilding so it will avoid frequent visit of patients to the hospital to do scanning procedures. AutoMap is anelevated performance homozygosis mapping tool using next-generation serialized data.

Figure 4:MRI Scan

To identify mutations in patients with genetics patterns in isolated inhabitants. . It has been used in grouping with genotypes from highly several forms markers, such as DNA or common **Single nucleotide polymorphism** s. The older software's prediction rate is lower than the current AI applications. Nowadays Whole Exome Sequencing (WES) and Whole Genome Sequencing (WGS), are able to map more precisely using AI applications.

Medicine Detection or Vaccine Detection

Developing drugs is not an easy process it's more expensive routine. So the failures in this process may cause lot of money and manpower waste.

To avoid this expenses we have to follow the steps in very efficient manner so better we can go through AI.

4 main stages in drug development:

- Stage 1: Identifying targets for intervention
- Stage 2: Discovering drug candidates
- Stage 3: Speeding up clinical trials
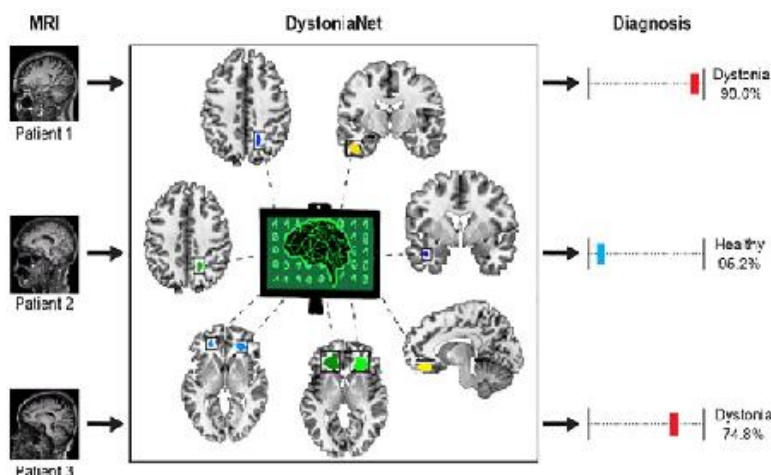- Stage 4: Finding Biomarkers for diagnosing the disease

Figure 5: Medicine Detection

Virtual Assistance in Medicine:

Virtual Assistance in Medical Industry is work like a software agent it assists based on the request given   Patients who will benefit the most from this type of virtual assistants are the old, patients with long-lasting diseases, and those in rural areas where admittance to care is low.

Patients can feel free to share their private details with virtual assistance rather than human beings. And virtual assistance can give remedies for the patient's illness more accurately without any human errors.
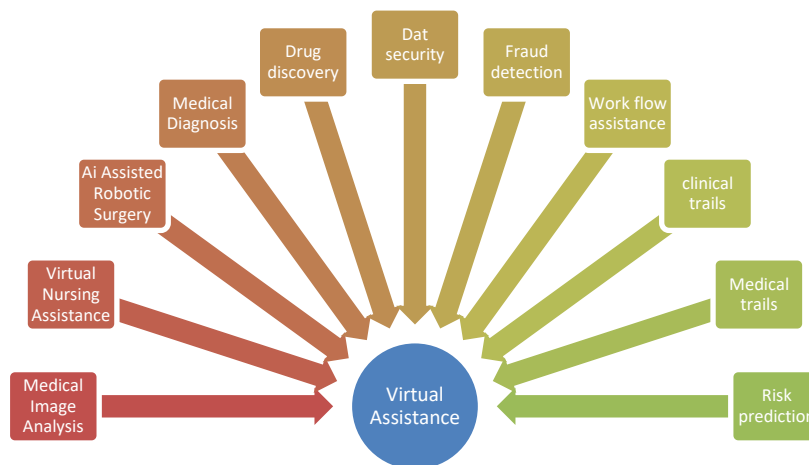

Figure 6: Virtual Assistance

AI in Drug discovery

Drug discovery is a time consuming process, so its need lot of manpower and longtime duration to attain a task. In this gradual process lot of   effort is needed to attain a task. Identifying a successful molecule to treat the disease is a challenging task. The main aim is to find a good chemical molecule to treat the human disease and usefulness to heal the patients.

This is a time consuming process so to avoid this delay better we can get a support from AI to attain the goal quickly.AI can help this progress to move little bit faster, using trained data set, it able to find the target very easily using the previous history, so the goal can attain very quickly.However, in the short term it has a number of challenges to overcome
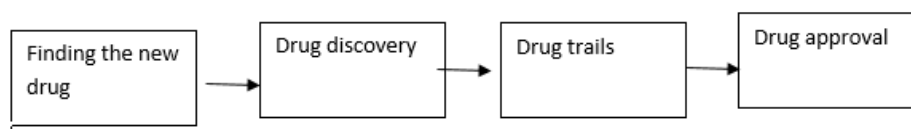

Figure 7: Drug Discovery

Understanding the correct path predicting the correct molecule   Selection using Testing

AI Tools

- **Scikit Learn.**

Scikit-learn is a key library for the Python programming language that is typically used in machine learning projects. Scikit-learn is focused on machine learning tools including mathematical, statistical and general purpose algorithms that form the basis for many machine learning technologies. As a free tool, Scikit-learn is tremendously important in many different types of algorithm development for machine learning and related technologies.

- **TensorFlow.**

  It tool is developed by Google and it is an Open source tool for deep learning applications. Tensor Flow was originally developed for large numerical computations without keeping deep learning in mind.

- **Theano.**

  Theano is a Python library that permits us to evaluate mathematical processes including multi-dimensional arrays so professionally.. It works a way faster on Graphics Processing Unit (GPU) rather than on CPU. Theano attains high speeds that gives a tough competition to C implementations for problems involving large amounts of data.. It is mainly planned to handle the types of computation for large neural network algorithms used in Deep Learning.

- **Caffe.**

  It is also another deep learning tool developed by UC Berkeley.

- MxNet.

  It is built to use deep learning algorithms, it is an open source tool. It helps to find the problem like speech recognition and machine translation.

CONCLUSION

AI will fulfill the future needs in the medicine field, examining lot of data that produced from the healthcare institutions. While AI is unlikely to replace medical doctor in the foreseeable future, it is binding on medical professionals to learn both the fundamentals of AI technology as well as how AI-based solutions can help them at work in providing better upshots to their patients. Or, it might come to pass that physicians who use AI might substitute physicians who are unable to do so.

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