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Predictive Cancer Detection and Treatment Using Machine Learning and Artificial Intelligence

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ABSTRACT- Machine Learning is a field of Computer Science used to derive meaningful insights through Big Data. With emerging technology, Machine Learning can now be used to predict almost any result according to any functionality. Machine Learning studies underlying patterns in the data and thus derives a suitable model. Medical Sciences face new challenges every day for example, illiteracy in patients about the actual diseases they are facing, taking further steps in treatments, medications needed to treat diseases and so on. This project will help patients to detect cancer and guide patients to proceed with the correct treatments through the mere input of symptoms faced, medical histories if any, current medical reports like blood, pathology, heart, ECG, etc. The model will thus be able to represent itself just how a doctor can, to patients.

KEYWORDS- Machine Learning, Artificial Intelligence, Diagnosis, Health Care Prediction

I. INTRODUCTION

The study of disease diagnosis is important in the world of healthcare. A disease is any cause or set of conditions that results in suffering, ailment, dysfunction, or ultimately death in a person. Physical and mental illness can have an impact on a person, and it can also significantly alter their way of life. The pathogenic process is the study of how disease develops [1]. A disease is Clinical professionals analyze signs and symptoms to create an illness [2][3][4]. The process of determining a disease from its signs and symptoms to determine its pathophysiology is known as diagnosis. As shown in Fig. 1, another definition of diagnosis is the process of identifying the disease based on a person's symptoms and indicators [5]. The information needed for a diagnosis is gleaned from the medical history and physical examination of the person with a pathology. This technique
frequently includes at least one diagnostic operation, such as performing medical testing.

A medical professional will go through a process with numerous phases to make an honest diagnosis, allowing them to gather the most information possible [6]. disease diagnosis is the most difficult process while also being a highly crucial event for a health care provider before obtaining the result. The diagnosis procedure could be extremely complicated and annoying. The care professionals gather empirical data to help reduce the uncertainty in medical diagnosis to determine the illness of a patient. the patient's appropriate care due to major health difficulties may be postponed or missed to incorrectly performing the diagnostic. regrettably, all doctors lack specialized knowledge in all fields of medicine. medical industry. Consequently, an automatic diagnostic system was required that offered advantages from both human expertise and machine accuracy [7]. An appropriate decision-support system is necessary to get precise outcomes from the diagnosis process at a reasonable price. For human experts, categorizing diseases based on many factors is a challenging task, but AI would make this task easier to spot and manage. Various AI methods are now in use in order to correctly diagnose illnesses in the realm of medicine. AI is a crucial component of computer science, which enables computers to gain intelligence. The essential requirement for any intelligent system is development. There are numerous AI approaches such as deep learning, machine learning, etc., that are based on learning. A rule-based intelligent system, one of the specialized AI techniques that is important in the medical profession, offers a set of if-then rules that serve as a decision support system in healthcare. AI-based automatic approaches, where human participation is minimal, are gradually replacing intelligent systems in the medical industry [8][9]. Machine learning (ML) is a field of study devoted to comprehending and developing "learning" techniques, or techniques that use data to enhance performance on a certain set of tasks. The idea is seen as a component of artificial intelligence. In order to generate predictions or choices without being explicitly taught to do so, Machine Learning algorithms develop a model from from training data, which are samples of data. Machine learning algorithms are utilized in a wide range of applications, including computer vision, speech recognition, email filtering, and medicine, where it is challenging or impractical to design traditional algorithms to do the required tasks.

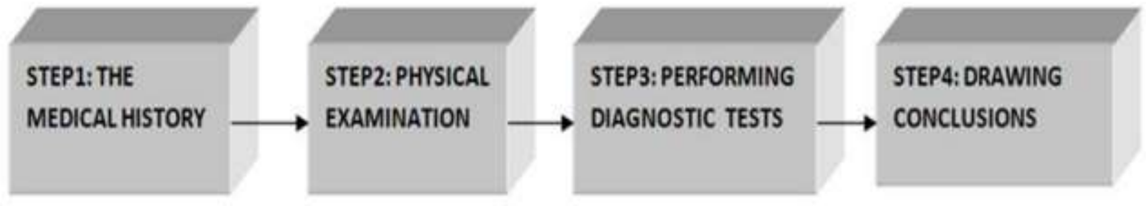


Figure 1: Block diagram of diagnostic process

A. Diagnostic Process

Sometimes the path to the right diagnosis is straightforward and brief. Consider the case of the typical shingles, where the single step is identifying the distinctive pattern of vesicular lesions. Compare the rash of shingles to the trickier symptoms, such as weakness, headaches, or chest pain, which typically call for a multi-step process to identify the cause. The "diagnostic process" is in some way taught to clinicians. What was overlooked is that every stage in the process has the potential for error, which could lead to a misdiagnosis. Errors are more likely to occur the further along the process they are. The ongoing issue of diagnostic mistakes in medicine requires that professionals retrain themselves in the diagnostic procedure as well as the prevalent cognitive and technical errors that occur at each stage. In the end, preventing medical mistakes begins with awareness, education, and metacognition, then involves enduring changes in clinical behaviors that enhance diagnostic performance and lower errors. A model of the diagnostic process has been described by the Institute of Medicine in its 2015 report, "Improving Diagnosis in Health Care," as well as by CRICO Strategies in its "2014 Annual Benchmarking Report." Both models outline the 10 to 12 parts that make up the process and talk about the shortcomings and mistakes that could occur at each stage. The information from CRICO, which examined over 2,300 malpractice cases and calculated the frequency of inaccuracy related to each diagnostic stage, is particularly intriguing. The tendencies that resulted from this investigation offer clinicians and patient safety experts useful knowledge. The diagnostic procedure's steps can be divided into three main groups:

- Initial Diagnostic Evaluation: Patient history, physical examination, assessment of the patient's symptoms and primary complaint, creation of a differential diagnosis, and ordering of diagnostic tests.
- Diagnostic Testing: Performance, interpretation, and communication of diagnostic test results.
- Referral, Consultation, Treatment, and Follow-Up: Medical monitoring, consultations, the discharge procedure, and patient compliance.

1) The Differential Diagnosis

The following stage is creating a differential diagnosis using the data from the principal complaint, history, exam, and risk factors. This stage of the diagnostic procedure is likely the most crucial since mistakes made in the preceding steps (history, exam, and symptom evaluation) are compounded and lead to a differential diagnosis that is either excessively specific or merely off-target. At this point, physician biases and cognitive mistakes rule the day over observable system flaws. Incorrect or incomplete information from the history and examination is processed cognitively and can lead to poor medical reasoning. The entire diagnostic process may be derailed by errors in judgement made at this stage, and unless a disciplined redirection takes place later, the proper diagnosis may be missed or delayed, which could have major repercussions for the patient's result and safety.

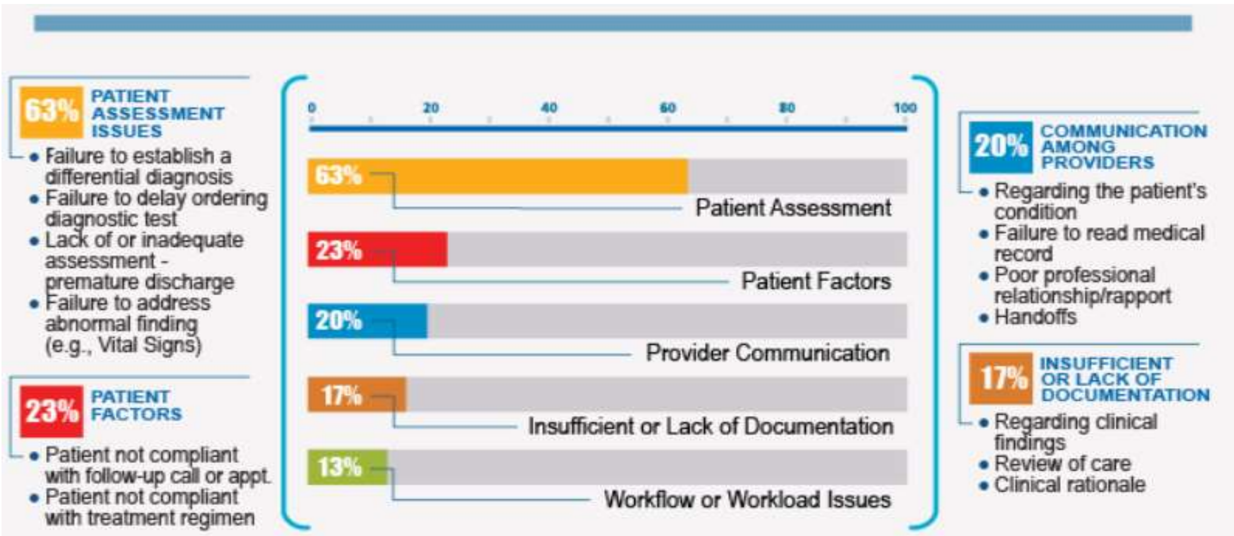
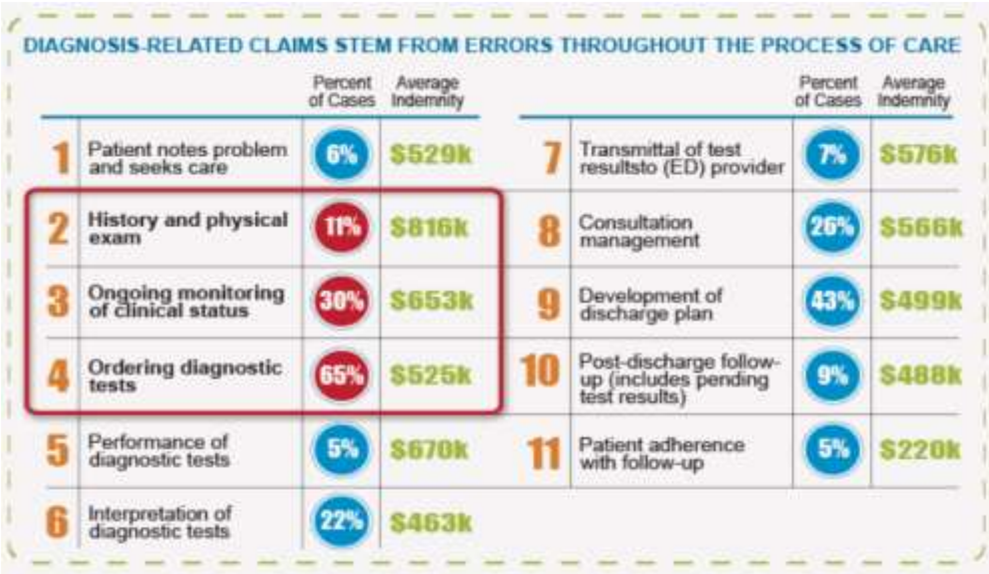


Figure 2: Failures in the Diagnostic Process

2) *The Crossroads of Thinking and Doing*

More malpractice cases than any other step in the procedure involve errors at the differential diagnosis step (33% of cases), with test ordering problems coming in a close second (30%). Why these 2 actions are at the top of the list should be obvious. The inappropriate imaging and lab tests are ordered as a result of an insufficient or incorrect differential diagnosis, which results in the wrong diagnosis, the incorrect course of therapy, and an undesirable result. The IOM report listed eight "Goals for Improving Diagnosis and Reducing Diagnostic Error," while emphasizing that there is no single solution and that there is a need for education and training for all healthcare professionals in the areas that are deemed to be lacking, such as clinical reasoning, teamwork, communication, the use of diagnostic testing, and health IT. Reexamining the diagnostic procedure and thoroughly dissecting each stage to uncover not just its advantages but also the risks that result in errors along the way is a good place for clinicians to start.


DIAGNOSIS-RELATED CLAIMS STEM FROM ERRORS THROUGHOUT THE PROCESS OF CARE

		Percent of Cases	Average Indemnity
1	Patient notes problem and seeks care	6%	$529k
2	History and physical exam	11%	$816k
3	Ongoing monitoring of clinical status	30%	$653k
4	Ordering diagnostic tests	65%	$525k
5	Performance of diagnostic tests	5%	$670k
6	Interpretation of diagnostic tests	22%	$463k
7	Transmittal of test resultsto (ED) provider	7%	$576k
8	Consultation management	26%	$566k
9	Development of discharge plan	43%	$499k
10	Post-discharge follow-up (includes pending test results)	9%	$488k
11	Patient adherence with follow-up	5%	$220k

Figure 3: Factors Involved in Failure to Diagnostic Cases

B. *Artificial Intelligence*

The capacity of machines, especially computer systems, to imitate human intellectual processes is known as artificial intelligence. Expert systems, machine learning, natural language processing, speech recognition, and machine vision are a few examples of specific AI applications.

1) *Working of AI*

As the hype surrounding AI has risen, vendors have been hurrying to highlight how their products and services utilize AI. When people talk about AI, they frequently only mean one part, like machine learning. For the creation and training of machine learning algorithms, AI requires a foundation of specialized hardware and software. Although there is not a single programming language that is solely related to AI, a few are, including Python, R, and Java. A vast volume of labeled training data is often ingested by AI systems, which then examine the data for correlations and patterns before employing these patterns to forecast future states. By studying millions of instances, an image recognition tool may learn to recognize and describe things in photographs, much as a chatbot that is given examples of text chats can learn to make lifelike exchanges with people.

2) *Types of AI*

- *Reactive Machines*

These AI systems have limited memory and are task-specific. An example is Deep Blue, the IBM chess program that defeated Garry Kasparov in the 1990s. Deep Blue can recognize the chess pieces and predict moves, but it lacks memory, making it unable to draw on prior knowledge to forecast the future.

- *Limited Memory*

These AI systems have memories, enabling them to use the past to inform their behaviors in the present. Some of the decision-making techniques used by self-driving cars are designed in this manner.

- *Theory of Mind*

The term "theory of mind" is used in psychology. When applied to AI, it suggests that the system would be socially capable of identifying emotions. This type of artificial intelligence will be able to predict behavior and infer human intentions, which is a necessary skill for AI systems to function as crucial members of human teams.

- *Self-Awareness*

In this category, AI programs fall under the definition of consciousness since they are self-aware. Machines with self-awareness are aware of their own circumstances. There is not such an AI at the moment.

3) Applications of AI

- *AI in Healthcare*

The biggest bets are on raising patient outcomes and lowering expenses. Businesses are using machine learning to diagnose issues more quickly and accurately than humans. A well-known healthcare technology is IBM Watson. It understands everyday language and can respond to questions. Using patient data and other available data sources, the system develops a hypothesis, which it then presents with a confidence rating scheme for. The use of chatbots and virtual health assistants online to help patients and other consumers of the healthcare industry with administrative activities including booking appointments, comprehending billing, and locating medical information is another application of AI. Several AI technologies are being used to anticipate, address, and comprehend pandemics like COVID-19.

- *AI in Business*

Artificial Intelligence algorithms are being included into analytics and customer relationship management (CRM) platforms to learn how to better serve clients. Chatbots have been incorporated into websites to give users immediate assistance. Academics and IT experts are currently having a discussion about job automation.

- *AI in Education*

AI can automate grading, giving teachers more time. Students can work at their own pace because their needs can be assessed and satisfied. AI tutors can give students extra support to help them stay on track. It might also change where and how kids learn, possibly even replacing certain teachers.

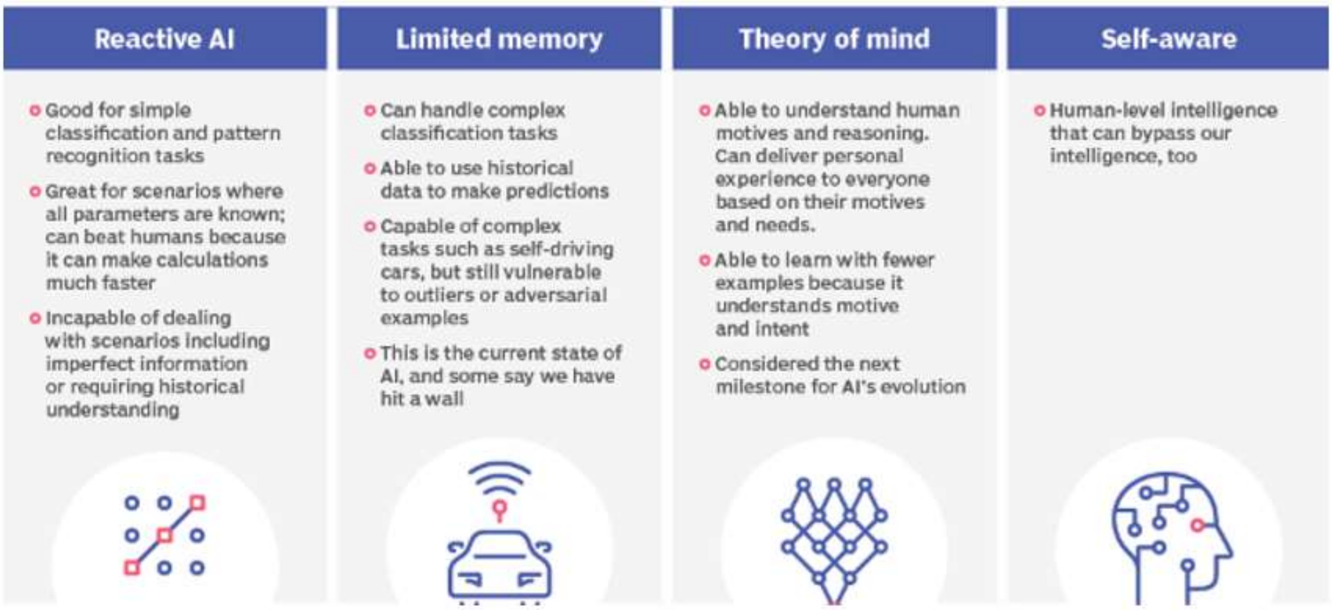
- *AI in Transportation*

AI technologies are used in the transportation sector to manage traffic, anticipate airline delays, and boost the effectiveness and safety of maritime shipping, in addition to playing a critical role in the operation of autonomous cars.

- *AI in Finance*

Artificial intelligence (AI) in personal finance software like Intuit Mint or TurboTax is upending financial institutions. Applications like this one collect personal data and provide financial advice. Other technology, including IBM Watson, have been deployed in the home buying process. Today, artificial

Table 1: Types of Artificial Intelligence



intelligence software handles a sizable chunk of Wall Street trading.

- *AI in Manufacturing*

The manufacturing sector was a pioneer in integrating robots. Cobots are a type of industrial robot that was originally programmed to carry out single tasks and kept apart from human workers. Cobots are smaller, multitasking robots that work alongside humans and take on more responsibility for the job in warehouses, factories, and other workspaces.

4) AI as a Service

Many suppliers are adding AI components in their normal services or giving access to artificial intelligence as a service (AIaaS) platforms because AI hardware, software, and human expenses can be high. AIaaS enables people and businesses to test out various platforms and do various business goals with AI before committing.

5) *Machine Learning*

A data analysis technique called machine learning automates the creation of analytical models. It is a subfield of artificial intelligence founded on the notion that machines are capable of learning from data, spotting patterns, and making judgments with little assistance from humans.

6) *Machine Learning Methods*

- *Supervised Learning*

Using labelled instances, such as an input where the desired output is known, supervised learning algorithms are trained. For instance, a piece of equipment might have data points with the labels "R" (passed) or "F" (failed) (runs). A collection of inputs and their matching correct outputs are given to the learning algorithm, and it learns by comparing its actual output to the proper outputs in order to identify faults. The model is then adjusted accordingly. The purpose of supervised learning is to use patterns to forecast the label values on new unlabeled data using techniques like classification, regression, prediction, and gradient boosting. Applications where past data predicts anticipated future events frequently employ supervised learning.

- *Semisupervised Learning*

The same applications as supervised learning also apply to Semisupervised learning. However, it employs both labelled and unlabeled data for training, generally combining a sizable amount of unlabeled data with a small amount of labelled data (because unlabeled data is less expensive and takes less effort to acquire). Methods like classification, regression, and prediction can be utilized in conjunction with this kind of learning. When labelling is too expensive to allow for a fully labelled training procedure, Semisupervised learning is helpful. One of the earliest examples of this is recognizing a face on a webcam.

- *Unsupervised Learning*

Data without any prior labelling are subjected to unsupervised learning. The "correct answer" is not given to the system. The showing must be determined by the algorithm. The objective is to investigate the data and identify any internal structure. Transactional data lend themselves well to unsupervised learning. For instance, it can locate groups of customers with like characteristics so they can be handled similarly in marketing campaigns. Or it can identify the key characteristics that set distinct client segments apart from one another. Self-organizing maps, nearest-neighbor mapping, k-means clustering, and singular value decomposition are examples of common methods. Additionally, these algorithms are used to group textual subjects, provide product recommendations, and spot data outliers.

- *Reinforcement Learning*

Robotics, video games, and navigation frequently use reinforcement learning. Through trial and error, the algorithm learns through reinforcement learning which actions result in the biggest rewards. The learner or decision-maker is the agent in this sort of learning, together with the environment and actions, which are all things the learner or decision-maker interacts with (what the agent can do). The goal is for the agent to make decisions that maximize the anticipated benefit over a predetermined period of time. By adhering to a sound policy, the agent will attain the target much more quickly. Thus, the appropriate policy should be learned through reinforcement learning.

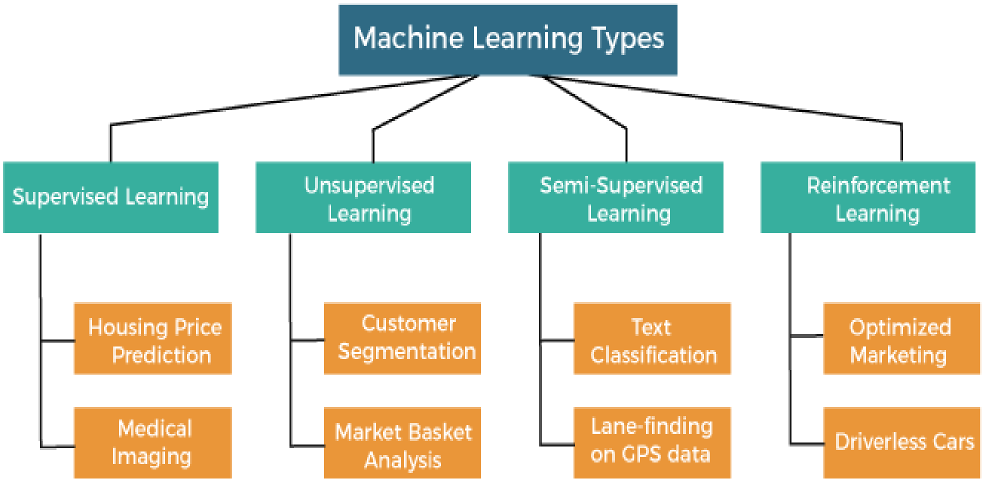


Figure 4: Methods of Machine Learning and Applications

7) *Applications of Machine Learning*

- *Financial Services*

Machine learning technology is mostly used by banks and other companies in the financial sector to find critical insights in data and stop fraud. The information can assist investors spot investment opportunities or determine the best times to trade. Additionally, data mining can locate customers with high-risk profiles or use cybersurveillance to find fraud red flags.

- *Health Care*

Thanks to the development of wearable technology and sensors that can use data to analyze a patient's health in real time, machine learning is a rapidly expanding trend in the health care sector. Medical professionals can use technology to examine data and spot patterns or warning signs that could lead to more accurate diagnosis and treatments.

- *Government*

Government organizations with many data sources that may be mined for insights, like public safety and utilities, have a special need for machine learning. For instance, analyzing sensor data reveals opportunities for cost- and efficiency-saving improvements. Additionally, machine learning can reduce identity theft and aid with fraud detection.

- *Retail*

Machine learning is being used by websites that use your past purchases to suggest products you might enjoy. Retailers rely on machine learning to collect, analyze, and use data to personalize the shopping experience, launch marketing campaigns, optimize prices, plan the supply of goods, and get insights into their customers.

- *Transportation*

The transportation sector, which relies on improving routes' efficiency and anticipating future issues to boost profitability, depends on data analysis to spot patterns and trends. Machine learning's data analysis and modelling features are crucial tools for delivery services, public transportation, and other transportation enterprises.

II. RELATED WORKS

The assessment and evaluation of transfer credit is a time- and bias-contingent, labor-intensive human intelligence activity in the area of post-secondary student mobility [16]. This study presents a natural language processing-based, semi-automated method for determining transfer credit and creating articulation agreements between post-secondary schools (NLP). A content expert-generated evaluation of transfer credit between computer science degrees at two different post-secondary schools is used to test the NLP system's output. Even while initial testing with an unsupervised NLP algorithm produced positive results when compared to established measurements, the proportion of course overlap was estimated to be 71%, which is comparable to the percentages chosen by human content experts. This paper helps to pick up concepts like NLPs to include in the project planned. The proportion of elderly individuals who wish and are still able to contribute to society has been on the rise steadily. Early retirement or leaving the workforce due to health-related difficulties is thus a serious issue [17]. The examination of risk factors and the screening for health issues are going toward automation in the modern day, thanks to technology advancements and a variety of data from various populations. In the context of this work, a framework for monitoring users' health, wellbeing, and functional ability that is worker-centric, IoT enabled, and equipped with AI capabilities is provided. Diabetes is a chronic disease with a high incidence that has negative effects on people's quality of life and a high death rate in both industrialized and developing nations. Therefore, if early detection is possible, its severe impact on humans' lives, including their personal, social, and professional lives, can be significantly lessened. However, the majority of research works in this area fall short of offering a more individualized approach to both the modeling and prediction processes. In this direction, our proposed system focuses on predicting the risk of developing diabetes and applies, assesses, and incorporates particular KDD process components. The development of datasets, feature selection, and classification using various Supervised Machine Learning (ML) models are specifically taken into consideration. With an Area Under the ROC Curve (AUC) of 0.884, the ensemble WeightedVotingLRRFs ML model is suggested to improve the prediction of diabetes. In terms of weighted voting, the Sensitivity and AUC of the ML model based on a bi-objective genetic algorithm are used to predict the best weights. Additionally, utilizing inductive and transductive learning, a comparison of the Finnish Diabetes Risk Score (FINDRISC) and Leicester risk score systems and other ML models is presented. Data from the English Longitudinal Study of Ageing (ELSA) database were used to conduct the trials. This work clarifies concepts about Machine Learning regarding Medical issues and their diagnosis.

Despite extensive research, pancreatic cancer has a dismal outlook with a five-year survival rate. More people will profit from a potential treatment, according to the theory underpinning early discovery and better survival. Machine and deep learning algorithms have proven to be useful tools in general healthcare for categorizing or detecting the risk of pancreatic cancer. We investigated many researchers' approaches for detecting pancreatic cancer using machine and deep learning models in this work as a result. The report [18] also highlighted their accomplishments and the challenges this industry still faces. In order to draw some conclusions, we took into account our assessment of the many potential options. Thus we infer the risks in cancer detection and hence apply Machine Learning techniques to help provide precise results.

In addition to being lethal by nature, leukemia is also very expensive to treat. However, early leukemia discovery can save lives and money for those affected, particularly youngsters, for whom leukemia is a relatively prevalent cancer type. In this study [19], we propose a supervised machine-learning model that accurately predicts the probability of early-stage leukemia based solely on symptoms. The suggested model is built using original data gathered from two significant hospitals in Bangladesh. With the help of a specialized doctor, a survey of leukemia and non-leukemia patients is used to collect sixteen dataset features. Thus, Artificial Intelligence is seen used to predict detections about Cancer.

Breast cancer (BC) is the second most common type of cancer in women that results in death, and it has a relatively high mortality rate. Early detection will lessen its impact. Early discovery of BC may motivate patients to receive quick surgical therapy, which will significantly improve the prognosis and likelihood of recovery. Therefore, it is essential to develop a system that enables the healthcare sector to detect breast cancer rapidly and effectively. Due to its benefits in modeling a vital feature detection from complicated BC datasets, machine learning (ML) is frequently utilized in the categorization of breast cancer (BC) patterns. In this research [20], we propose an ensemble of classifiers-based systems for the automatic detection of Cancer. Additionally, we investigated the results of balanced class weight on the prognostic dataset and evaluated its performance against others. The outcomes demonstrated that the ensemble technique performed better than previous cutting-edge methods and attained 98.83% accuracy. The medical sector and relevant research community place a significant deal of importance on the suggested system because of its outstanding performance. The comparison demonstrates that the suggested method performed better than other cutting-edge approaches. Thus, a significance of Machine Learning is seen to help the medical areas in detection and treatment of diseases rapidly and effectively. Critical as well as high frequency of types of diseases have always been a concern about health in majority of the world. Algorithms such as Machine Learning and Artificial help read all the input and decide for us what to do next.

III. SYSTEM ARCHITECTURE AND RESEARCH METHODOLOGY

A. Machine Learning and Disease Diagnosis

Within the broader topic of artificial intelligence, machine learning is the study of how a machine may train itself to accomplish tasks. In machine learning, there are algorithms for both supervised learning (under the direction and "guidance" of a human expert), in which we are initially aware of both the input and the results, and unsupervised learning (requiring very little human intervention or the assistance of a domain expert), in which we are unaware of the results. By providing examples and building pattern models that are intended to distinguish between two or more items, a machine is trained to learn a notion. Machine learning helps medical professionals handle huge and complex medical data and also aids in the investigation of the outcomes. The results of this procedure can be applied to more in-depth study. Therefore, when machine learning is used in healthcare, it raises patients' levels of faith in medical knowledge in order to use machine learning algorithms to anticipate diseases. Machine learning can be used to identify early stages of a disease before it manifests or becomes dangerous to a person in situations when illness cannot be diagnosed by human experts. As the saying goes, "Prevention is better than cure," this can aid in preventing more issues. As machine learning has gained traction in a variety of fields, it has tended to favor algorithms that deliver accurate results as opposed to conventional models that barely handle raw data. Different diseases are identified using machine learning methods like Decision Trees, Support Vector Machines, Multilayer Perception, Bayes classifiers, K-Nearest Neighbor, Ensemble classifier Techniques, etc. The use of machine learning algorithms can result in quick and accurate disease prediction. The first step in learning is making observations or gathering knowledge from examples, hands-on experience, or teaching. The algorithms, in particular, search for data trends and improve decision-making. The main objective is to let computers learn naturally, free from human meddling, and modify their responses accordingly [10]. The goal of AI's contribution to medical science is to create tools that can assist a doctor in making expert and more accurate diagnoses. Machine learning is heavily reliant on illness forecasts. ML approaches can be used to forecast a variety of diseases. Here, we look at the numerous disease kinds that can be predicted using machine learning approaches. We concentrated on the prognosis of a few chronic illnesses, such as renal disease, diabetes, heart disease, breast cancer, lung conditions, etc.

The most common chronic condition in women is BREAST CANCER. the leading cause of mortality and the most prevalent cancer disease. Machine learning has become a useful technique in recent years. when looking for breast cancer. [11] 's attention on creating a breast cancer detection model based on the tumor characteristics collected. to gather pertinent information K-means was used to analyze the data and identify the tumor. determine the malignant and benign tumors hidden designs. The classifier was then trained to distinguish between the incoming tumors using SVM. Their method increases accuracy around 97% of the time. In another study, [12] their investigation of breast cancer using various machine-learning techniques. The main goal was to assess each algorithm's accuracy in classifying data in terms of correctness, precision, and sensitivity. These algorithms' outputs revealed that SVM had the highest accuracy.

Computer systems now possess new capabilities that humans could never have imagined thanks to machine learning. Machine learning is an area of artificial intelligence that allows computers the ability to learn for themselves from examples [13] in order to evaluate how various models perform in ML without the use of human judgement. ML's operation is described in detail as follows [14], as seen in Fig. 5.

1) Data Collection

The first step is to gather information. As quality and quantity have an impact on the system's overall performance, this phase is extremely important. In essence, it is a procedure for acquiring information about specific factors.

2) Data Preparation

The second step is data preparation, which comes after data gathering. It is a procedure that transforms unusable data into data that can be used to make decisions. This method is also known as data cleaning.

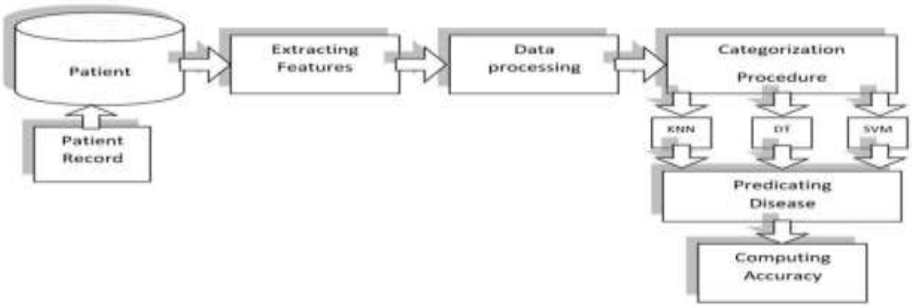


Figure 5: Machine Learning System for Detecting Diseases

3) Choose a Model

In order to represent preprocessed data in a model, one selects the right algorithm for the job.

4) Train the Model

In ML, supervised learning is used to train a model to improve the precision of predictions or decision-making.

5) Evaluate the Model

In order to assess the model, a number of parameters are necessary. The variables are determined by the specified goals. Additionally, one must record the performance of the model in comparison to the earlier one.

6) Parameter Tuning

This stage may contain initialization parameters, distribution, performance, learning rate, and the number of training steps.

7) Make Predictions

Predicting an outcome on the test dataset is essential for comparing the developed model to the real world. The model can be used to make additional predictions if the result agrees with the opinions of domain experts or experts who are close to the outcome.
The following are the fundamental procedures for disease identification using ML [14][15]:

- Gather test information along with patient details.
- The process of feature extraction selects characteristics that are helpful for disease prediction.
- Next, choose and process the dataset after choosing the attributes.
- Different categorization methods, such as those shown in the diagram, can be used to preprocess datasets to assess the accuracy of illness prediction.
- The effectiveness of various classifiers is compared in order to choose the one with the highest accuracy.

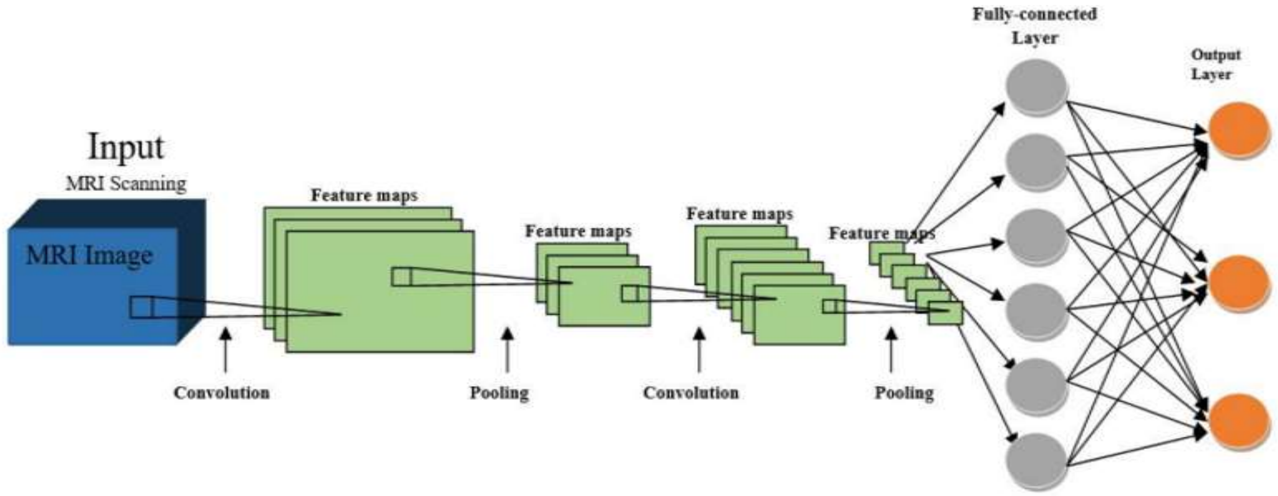


Figure 6: Deep Process to Diagnose a Disease

This Machine Learning model will also help to not only detect, but also treat the disease till the end of the treatment cycle. After the detection of the type of cancer, the model will ask and accept the reports generated by doctors at that stage and will compare it with the datasets with which the model is already trained for. Once comparison is executed, it will generate a suggestion or an opinion to take on for further treatment. Artificial Intelligence will be used to help communicate better with users with low literacy levels or differently abled. The basic concept of Chatbots, Natural Language Processing will be used for this purpose. Image Classification techniques have grown to a large extent in today's world. This technique will be used to read text from the report, which will act as input for the model to give an opinion on. Libraries such as streamlit will be used to combine all the technologies under one roof. Concepts such as KNN Classifiers, Decision Trees, and Support Vector Machines will be used to help classify the input into the preferred output.Top of Form.

IV. CONCLUSION

Recent advancements in AI technology have led to successful applications of AI in the healthcare industry. Even the debate over whether AI expert systems will ever take the place of human doctors has gained prominence. Despite this, we recognize that the AI expert system may aid the human doctor in making a better choice or, in some cases, may even replace human judgment. Various AI algorithms can be utilized to extract relevant data from numerous clinical data sets. AI methods are also trained in a way that makes it possible for them to be self-learning, error-correcting, and produce results with a high degree of accuracy. The three AI techniques for diagnosing were discussed and implemented.
The authors, published years, various AI tools, fuzzy methods, machine learning methods, deep learning methods, various types of diseases, results, and finally the impact of AI methods used in disease diagnosis are all taken into consideration when distributing all the retrieved papers. The findings indicated a rapid increase in the frequency of papers published in the medical sector. This study also sought to determine which AI approach, as perceived by the majority of researchers, was the most useful for diagnosing diseases. Based on our research, we came to the conclusion that the use of AI in healthcare improves diagnosis procedures and helps to identify diseases at their earliest stages, allowing for the selection of the most effective treatment strategy.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

ACKNOWLEDGEMENTS

It is indeed a great pleasure and moment of immense satisfaction for we present a paper on “Predictive Cancer Detection and Treatment Using Machine Learning and Artificial Intelligence" amongst a wide panorama that provided us inspiring guidance and encouragement, we take the opportunity to thank those who gave us their indebted assistance. We wish to extend our cordial gratitude with profound thanks to our guide Prof. Shailesh Bendale for his everlasting guidance. It was his inspiration and encouragement which helped us in completing our project. Our sincere thanks and deep gratitude to Head of Department, Prof. Shailesh P. Bendale and other faculty members; but also to all those individuals involved both directly and indirectly for their help in all aspect of the project.

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