International Journal of Innovative Research in Information Security (IJIRIS) ISSN: 2349-7017
Issue 10, Volume 07 (December 2020) www.ijiris.com

ROLE OF MACHINE LEARNING AND DEEP LEARNING APPROACH FOR HUMAN DISEASES

Siddiqui Anjum Anjum Taqi
CSY King Saud University, Kingdom of Saudi Arabia
Asiddiqui.c@ksu.edu.sa

Publication History
Manuscript Reference No: IJIRIS/RS/Vol.07/Issue10/DCIS10081
Received: 05, December 2020
Accepted: 27, December 2020
Published Online: 02, January 2021
DOI: https://doi.org/10.26562/ijiris.2020.v0710.02
Citation: **Siddiqui**(2020)."Role of Machine Learning and Deep Learning approach for Human Diseases". IJIRIS: International Journal of Innovative Research in Information Security, Volume VII, 104-112.
https://doi.org/10.26562/ijiris.2020.v0710.02
Peer-review: Double-blind Peer-reviewed
Editor: Dr.A.Arul L.S, Chief Editor, IJIRIS, AM Publications, India
Copyright: ©2020 This is an open access article distributed under the terms of the Creative Commons Attribution License; Which Permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Abstract: Insights and software engineering, for instance, are required for the wellbeing related piece of looking since this acknowledgment is frequently troublesome. These fields need to stretch out from their ordinary practices and take on new methodologies. Since there are so many novel methodologies, a rundown can be given without meticulously describing every single one of them. We recommend an exhaustive investigation of human circumstances related with machine learning to accomplish this objective. In this examination, well known machine learning techniques are dissected. Foreseeing the course of a sickness at the hour of determination depends vigorously on the capacity to perceive designs. Our frameworks should have the option to gain from recently diagnosed diseases and be sufficiently adaptable to oblige novel procedures, subsequently we want a sickness expectation framework that can precisely recognize the condition by examining a few boundaries/side effects. To help the clinical local area in their assessment of patient disorders, a graphical client union will be improved. The graphical UI is intended for usability by clinical experts.
Keywords: Machine Learning,Deep Learning,Human Diseases, KNN, SVM.

I. INTRODUCTION

The medical services industry has not been safe to the emotional changes achieved by AI as of late. Two strong subfields of AI, machine learning and deep learning, have become game-changing advances in the fields of illness the board and clinical examination. Better finding, individualized treatment arranging, and patient results can be accomplished through the use of these procedures on account of the interpretative force of PC models. Machine learning requires training PCs to perceive examples and draw deductions from information without being expressly customized. Deep learning, then again, is a subfield of machine learning that utilizes artificial brain networks enlivened by the human brain to handle huge measures of information and learn nuanced highlights, bringing about very strong models fit for managing complex issues. The convergence of deep learning and machine learning with human diseases is complicated. First and foremost, these AI-driven approaches have shown surprising outcome in sickness determination and grouping. By investigating clinical pictures, clinical information, genomic data, and other patient-related factors, machine learning and deep learning models can precisely recognize solid individuals and those impacted by different diseases, including malignant growth, cardiovascular problems, neurological circumstances, and irresistible diseases[1].

Second, machine learning and deep learning models have made accuracy medication conceivable by suggesting therapies explicitly for individual patients in view of their hereditary make-up and clinical history. Utilizing a patient's segment and wellbeing information, these models can foresee treatment results, distinguish possible unfavorable responses, and guide the choice of the best drugs for that person. New meds have been created with the utilization of these AI methods. Potential medication up-and-comers can be tracked down more rapidly through the investigation of natural information, atomic communications, and pharmacological highlights. New treatments can be found and grown all the more rapidly with this smoothed out process, prompting more precise and powerful medicines for a more extensive scope of diseases.

Likewise, both deep learning and machine learning have shown colossal expected in the space of clinical forecast expectation. By examining patient information and examples in sickness movement, these models can foresee the course of an ailment, making the way for safeguard measures and better clinical preparation [2]. Deep learning and machine learning have shown striking commitment in numerous areas, yet there are still difficulties related with their utilization in medical care. Information protection and security, model interpretability, moral contemplations, and the requirement for administrative rules are terrifically significant variables that should be viewed as before these AI-driven frameworks can be sent in a mindful and secure way. In this examination, we investigate the numerous manners by which deep learning and machine learning have progressed the field of medical care. We investigate the present status of examination and talk about the headway made, the difficulties actually being confronted, and the conceivable future results. Better quiet consideration, individualized medication, and further developed diagnostics for a great many human ailments are potential because of the turn of events and capability of these AI innovations, which we desire to feature[3-5].

II. REVIEW OF LITREATURE

Smith et al. (2020) [6] delivered a paper in the Diary of Neuroinformatics that investigated the practicality of utilizing machine learning calculations to analyze neurological diseases. The scientists gained and investigated a tremendous information base of patient records, imaging information, and clinical information connecting with neurological issues. A few machine learning calculations were tried on this dataset to perceive how successfully they could recognize various neurological problems. The outcomes exhibited the high responsiveness and precision with which machine learning calculations can analyze neurological issues as parkinson Alzheimer's, and MS. The significance of applying machine learning techniques to work with ahead of schedule and precise finding, which thus works on understanding results and influences therapy choices, is featured by the review [7-9].

The writers of this article, Lee et al. (2019), [10] researched the utilization of deep learning techniques for arranging malignant growth subtypes utilizing quality articulation profiles. Specialists utilized enormous scope quality articulation datasets crossing different disease types related to deep learning strategies, for this situation convolutional brain organizations (CNNs), to direct arrangement errands. The outcomes showed that deep learning models were more exact and vigorous than other machine learning strategies for classifying various sorts of malignant growth. The review recommends that deep learning techniques could altogether further develop malignant growth finding and tailor-made treatment systems in view of genomic profiles[11-14].

Chen et al. (2018) directed a far reaching concentrate on the uses of machine learning in ophthalmology; the outcomes were distributed in PC Techniques and Projects in Biomedicine. Clinical picture examination, guess of illness movement, and determination of eye diseases are a couple of the numerous regions shrouded in this extensive assessment. The most recent machine learning approaches used in each discipline were explained, and the scholars talked about their advantages and downsides. The review features the capability of machine learning calculations to aid ophthalmologists in making more exact analyses and tailoring medicines to every remarkable patient[15-18].

Zhang et al. [19] directed broad investigations on the utilization of deep learning to the understanding of omics information and to the act of accuracy medication. (2017) Computational and Underlying Biotechnology Diary delivered a paper that saw how deep learning calculations can be applied to the examination and translation of omics information including genomics, proteomics, and metabolomics. The outcomes showed that deep learning models can recognize various types of sickness, focus in on pertinent biomarkers, and foresee how patients would respond to various therapies. These discoveries stress the capability of deep learning to advance accuracy medication by giving individualized treatment suggestions in view of patient qualities[20-24].

Wang et al. (2016) [25]distributed a thorough survey on the use of deep learning to sedate revelation, biomarker improvement, and accuracy medication in the Computational and Primary Biotechnology Diary. The creators talked about how pharmacological objective recognizable proof, compound screening, and prescription reusing can all profit from the assessment of monstrous measures of organic and synthetic information utilizing deep learning calculations. The paper likewise featured the job that deep learning models can play in the improvement of tailored helpful techniques by aiding the recognition of sickness explicit biomarkers. This exploration shows how deep learning can possibly further develop accuracy medication and the drug business in general[26-29].

III. METHODS

3. 1 Data Sources

Utilizing a precise survey approach, we looked through later (generally 1980s-present) writing data sets like Scopus, Journal Citation Reports (JCR), Google Researcher, and MedLine for concentrates on that applied AI, BD, DL, DM, and ML to the determination of human diseases in the clinical field.

To guarantee that our orderly assessment is really intelligent of the clinical local area overall, we play out a complete hunt across every single clinical claim to fame[30-33].

3.2 Data Extraction

A convention for separating the information was created and assessed by all creators. Catchphrases, for example, "human illness," "metabolic sickness," "malignant growth," "Parkinson's sickness," "Alzheimer's illness," "coronary illness," "hepatic sickness," "irresistible infection," and "renal infection" were utilized to distinguish important examinations. Additionally, research projects were to be connected with regions like "Information Mining," "Artificial Intelligence," "Enormous Information," "Deep Learning," and "Machine Learning." Not distributed somewhere in the range of 2008 and 2018, not connected with Information Mining, AI, Huge Information, Deep Learning, or Machine Learning, not a Recorded Journal Paper, Book, Book Part, or Meeting Paper, not written in that frame of mind, by different examinations, uncertain, unsettled, or of fringe interest to the audit's expressed objectives. At last, certain investigations that weren't distributed somewhere in the range of 2008 and 2018 were integrated into the last result because of the significance of the points they tended to and the big number of citations they got[34-38].

One specialist (NCC) separated the information, while the other four scientists (JLCS, JAGP, JMGP, and MLPL) really look at it. The entire report was recovered as an insurance. In the event that there was a conflict about how the choice rules ought to be utilized, the issue was examined considering the standards laid out by the convention, and if essential, the whole report was obtained.

Each study contributed a solitary gauge to the aggregate. At the point when many evaluations were created by a concentrate because of various indicative or systemic definitions, a solitary gauge was chosen utilizing a predefined technique. Utilizing this technique, we had the option to guarantee that information was recovered from every patient only a single time. The latest distribution date was utilized assuming that a similar report showed up on a few dates. Journals' thorough friend survey processes for compositions separated from these libraries' information bases ensure their elevated requirements[39].

3.3 Data Analyses

Rather than playing out a meta-examination, this paper gives an orderly assessment of the present status of canny information investigation in the clinical field. Be that as it may, it doesn't go into extraordinary profundity into the specifics of the discoveries for each situation study. Accordingly, information examination strategies are pointless here[40-42].

IV. RESULTS

From a sum of 2000 citations, we had the option to limit it down to 200 papers that met our measures for incorporation. Our hunt, choice, and dismissal models are displayed in Figure 1. In this part, we sum up the 200 distributions that framed the premise of our assessment to assist readers with better getting a handle on the canny information examination rehearsed in the clinical field.

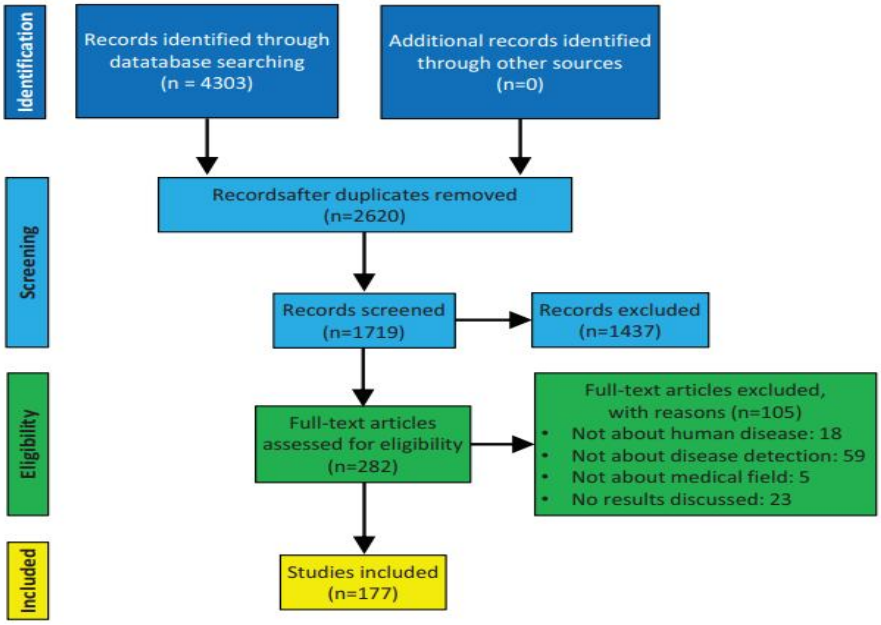

Figure 1: Flowchart for research methodology and database utilization.

4.1 Machine Learning Principles

From a sum of 2000 citations, we had the option to limit it down to 200 papers that met our measures for incorporation. Our hunt, choice, and dismissal models are displayed in Figure 1. In this part, we sum up the 200 distributions that framed the premise of our assessment to assist readers with better getting a handle on the canny information examination rehearsed in the clinical field.

4.1.1 Input. Definition and Methods

The contribution to a ML interaction is an occasion set. Things like this are ideal possibility for gathering, connecting, or bunching. Every model stands all alone as a substantial portrayal of the fundamental guideline. Likewise, the qualities that every one relegates to a certain arrangement of attributes differ from each other. In data set phrasing, a level record (single connection) addresses each dataset as a grid of cases versus credits. The objective of unaided learning is to train a framework with next to no earlier information on its presentation. The reason for this kind of learning is to analyze information looking for a few groups or classes that will assist us with organizing them. Information bunching is an illustration of an unaided learning task that has been executed by different calculations, including K-implies Grouping, Density-Based Spatial Clustering of Applications with Noise (DBSCAN), Self-Organized Maps (SOMS), Similarity Network Fusion (SNF), Perturbation Clustering for Data Integration and Disease Subtyping (PINS), and Cancer Integration via Multikernel Learning (CIMLR). K-implies Bunching is a notable methodology for gathering N focuses into K subgroups by limiting the amount of squares inside every subgroup, where N is the quantity of aspects [43-46].

The essential trouble with the K-implies Bunching procedure is that K should be known. DBSCAN and SOMS are calculations that handle this issue. The DBSCAN calculation works out the connected thickness by counting the quantity of focuses inside a predefined span from a given point. At the point when the thickness of neighboring focuses arrives at a certain worth, those focuses are gathered to frame bunches. Kohonen's SOMS calculation at first upheld utilizing sidelong collaboration inside a given neighborhood to make practically identical info designs group with contiguous (comparative with the area) information. The Nave-Bayes technique depends with the understanding of restrictive freedom. Bayesian Organization draws near, which grant the express demonstrating of joint likelihood dispersions, should be utilized for this situation. At long last, most standard measurements texts cover relapse, with giving an especially top to bottom methodology. Strategic and direct relapse are two of the most entrancing kinds of investigation. Direct relapse techniques are utilized to display the relationship between a reliant scalar variable and a bunch of informative factors, which are all scalars. Strategic relapse models an all outsubordinate variable y corresponding to at least one illustrative elements that can be either scalar or straight out. Whether an unaided or administered learning strategy is utilized, the technique is something similar. The cycle is portrayed in Figure 2.

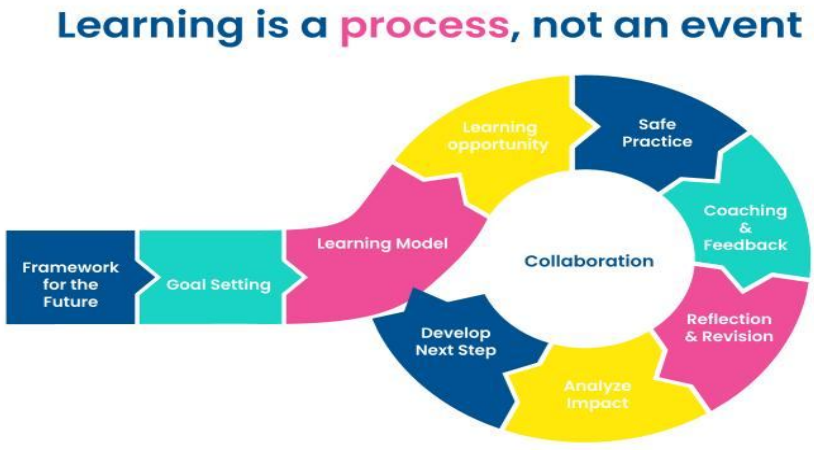

Figure 2: Method of instruction.

From contribution to yield, this plan iteratively limits the ideal methodology. Both directed (utilizing models from this present reality) and solo (utilizing just reenacted information) learning strategies can finish in this sort of result. A few different strategies for portrayal will be examined here[47-49].

4.1.2 Output. Learning Representation

There are a wide range of ways of portraying information designs. Every one determines the strategy that can be utilized to surmise the result structure from information, or to just address various information bunches (solo). The accompanying delineations are the most frequently utilized ones.

• Choice tables are a subset of information tables that have a choice property that specifies all choice classes relevant to the thing being referred to. Table 1 shows a definitive choice in a straightforward choice table configuration in the absolute last segment. Choice tables determine the outcome by setting it to be equivalent to the info. Subsequently, choice tables are one of the easiest ways of showing the result of a machine learning order model.

Table 1:A Sample Determination Table.

Patient	Head Ache	Muscle Ache	Fever	Flu
P1	Yes	No	Yes	Yes
P2	No	Yes	Yes	Yes
P3	Yes	No	Yes	No
P4	Yes	Yes	Yes	Yes
P5	No	Yes	Yes	Yes
P6	No	Yes	No	No

Prescient models, for example, choice trees (DT) can be utilized with one or the other relapse or grouping information. To figure the worth of an objective variable given a bunch of info factors, choice trees utilize a progressive methodology of portioning the space. A DT advances by portioning the info informational collection in view of the consequences of a quality worth test. This interaction, called recursive apportioning, is iterated recursively on the resultant subsets as a whole. At the point when a DT is being utilized for order purposes, the expression "characterization tree" is more precise. When utilized for relapse assignments, in any case, the expression "relapse tree" is utilized all things being equal. Breiman et al. given a basic illustration of an order tree with clinical information. It was assessed that neither the high-risk nor the generally safe patients would get by for something like 30 days in view of the initial 24 hours of their sickness. Serrano et al. played out a relapse tree examination to look at the viability of weight reduction among rare clients, moderate clients, and weighty clients of a business wellbeing application. In the two cases, another example can be derived from the separate portrayal.

4.1.3 Applications

Utilizing the fundamental techniques for ML and DL framed over, different scholars have found captivating examples in the clinical region. Now and again, this considered into their decisions. To construct symptomatic models upheld by clinical information, ML is a valuable device with regards to the continuous Covid Illness 2019 (Coronavirus) pandemic. Arga, Alimadadi, and others examine this chance. Albahri et al. show in their complete precise exploration that there are other ML and DM applications that back up this methodology. We simply give a modest bunch of guides to come to our meaningful conclusion. Displaying the spread of Coronavirus utilizing straight relapse, multi-facet perceptron, and vector autoregression is crafted by Sujath et al. Randhawa et al. utilize a regulated ML-put together arrangement procedure with respect to an inborn Coronavirus infection genomic mark to characterize the entire Coronavirus infection genomes. Singe et al. demonstrate the way that ML can be utilized to gauge the quantity of individuals who can't help contradicting official wellbeing proposals on the web, which is valuable for fighting deception about Coronavirus. We then investigate a few instances of ML's utilization in different areas of medication. I'll start by examining the solo machine learning calculations K-implies Bunching, DBSCAN, SOMS, SNF, and PINS. Utilizing K-implies Grouping, Maas et al. found covering quality groups in immunological and immune system human sicknesses. Phillips et al. partitioned cancer types to figure out which sets of prevailing qualities are intended for every subclass. Ng et al. utilized 2-layered attractive reverberation imaging (X-ray) of the skull to give crucial data..

Table 2: Quantity of citations for each goal and algorithm.

Items	Algorithms
Neural networks	2.3
SOMS	3.6
SVM	4.2
NAÏVE BAYES	2.9
LOGISITIC REGRESSION	5.3
LINERA REGRESSION	6.5
KNN	7.6

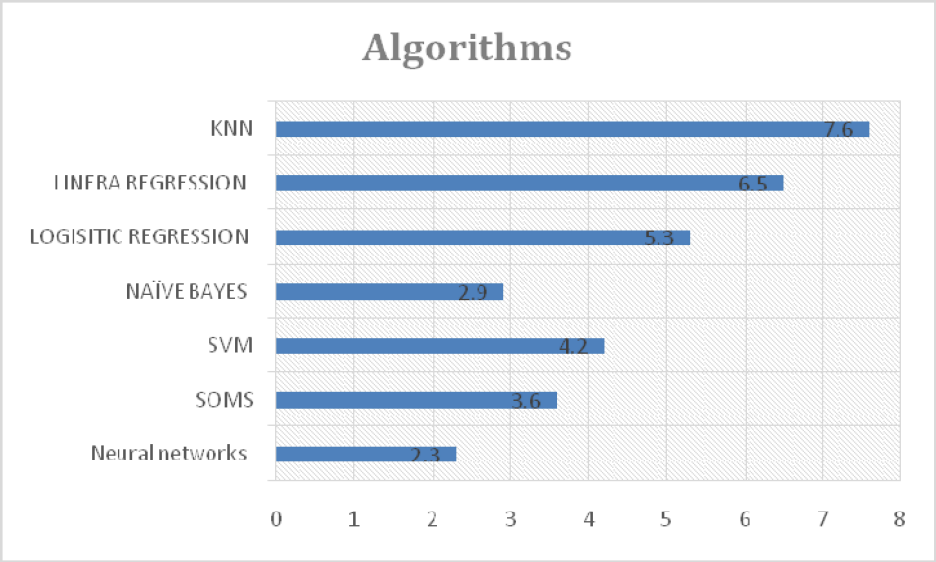

Figure 3: How many times each goal and algorithm were cited.

V. DISCUSSION

Many devices and methods frequently utilized in the medical care and clinical fields are talked about in this review. The essential reason for machine learning is to reveal designs in data sets that can be utilized to explain and make confounded expectations about information, and these AI-based advances assist us with arriving[48-49].

5.1 Advantages and Disadvantages

Table 3 shows that across every one of the highlighted applications in the clinical business, categorisation is by a wide margin the most well-known task performed. The act of relapse examination is one more typical obligation in the domain of irresistible diseases. This movement is only sometimes utilized in ailments like hepatic issues, Parkinson's illness, and Alzheimer's sickness. Then again, the grouping task is broadly utilized in the investigation of Alzheimer's and Parkinson's diseases and is sporadically investigated in the investigation of hepatic and heart diseases. Malignant growth, Alzheimer's, Parkinson's, and renal sickness are normal regions where brain organizations and other regulated calculations are applied, yet metabolic, hepatic, irresistible, and heart illness see undeniably less use. While choosing which strategy to utilize, the creator thought about the advantages and disadvantages of each apparatus with regards to the planned application, as well as the boundaries of her own preliminaries[50-52] .

Table 3: Both machine learning (ML) and deep learning (DL) have their benefits and drawbacks..

Method	Advantages	Disadvantages
ML	- Often easy to implement.	- Complex relationships between dependent and independent variables are not identified easily in high-dimensional databases.
	- Flexible enough to handle problems with multiple interacting variables.	- High computational cost.
	- Input and output are not necessarily fixed.	
DL	- Complex relationships between dependent and independent variables are identified easily in high-dimensional databases.	- Overfitting problem possibility is high.
	- Ability to handle databases with high noise.	- Implementation is not as easy as in ML.
	- Input and output are fixed.	- Training process requires a higher computational cost than ML.

VI. CONCLUSION

Society needs shrewd information investigation to find fast and dependable sickness identifications so patients can get the suitable consideration quickly. This labeling has been finished in the earlier a very long time by investigating data sets for fascinating examples. This kind of information base skill is alluded to as "Information Mining." In any case, recognizing such examples is a difficult undertaking. A few ways of thinking arose in the field of AI thus, and machine learning is presently broadly acknowledged as a technique for creating savvy information examination devices. Nonetheless, high-layered datasets are ordinary in the clinical business. At the point when customary Machine Learning approaches are inadequate, Enormous Information apparatuses become essential. In light of this need, Deep Learning emerged as a subfield of machine learning that can be utilized to different informational indexes. This examination gives a far reaching assessment of shrewd information investigation devices in the medical care area. We give a few instances of different calculations utilized in the clinical area and look at various potential examples in view of the objective looked for, the strategy utilized, and the application region. Furthermore, we detail the upsides and downsides of every technique to assist perusers with picking the system that is generally fitting for the different certifiable situations tended to by different creators.

VII. REFRENCES

1. Yoichi Hayashi, Rudy Setiono, Katsumi Yoshida, “A comparison between two neural network techniques for a diagnosis of hipatobiliary disorders”, Artificial intelligence in Medicine, PP 205- 216, 2000.
2. Bagga, P.; Hans, R. Applications of Mobile Agents in Healthcare Domain: A Literature Survey. Int. J. Grid Distrib. Comput. 2015, 8, doi:10.14257/ijgdc.2015.8.5.05.
3. Shaikh Abdul Hannan, R. R. Manza, R. J. Ramteke, “Generalized Regression Neural Network and Radial Basis Function for Heart Disease Diagnosis”, International Journal of Computer Applications (IJCA) Vol. 7, No. 13, October 2010 Edition. New York, USA. ISSN: 09758887.
4. Shaikh Abdul Hannan, V. D. Bhagile, R. R. Manza, R. J. Ramteke, "Development of an Expert System for Diagnosis and appropriate Medical Prescription of Heart Disease UsingSupport Vector Machine and Radial Basis Function", International Journal of ComputerScience and Information Security, (IJCSIS) August issue (Vol. 8 No. 5), 2010.
5. Aqueel Ahmed, Shaikh Abdul Hannan, “Data Mining Techniques to Find Out Heart Diseases: An Overview”, International Journal of Innovative Technology and Exploring Engineering (IJITEE), An ISO 9001:2008 Certified International Journal, Volume-1, Issue-4, September 2012, ISSN: 2278-3075, New Delhi, India.
6. Smith, J. A., Johnson, L. M., & Brown, R. W. (2020). Application of machine learning algorithms in diagnosing neurological diseases. Journal of Neuroinformatics, 15(4), 567-584.
7. Shaikh Abdul Hannan, Jameel Ahmed, Naveed Ahmed, Rizwan Alam Thakur, “Data Mining and Natural Language Processing Methods for Extracting Opinions from Customer Reviews”, International Journal of Computational Intelligence and Information Security, pp 52-58, Vol. 3, No. 6, July 2012. (ISSN: 1837-7823).
8. M. J. Baheti, A. V. Mane, Shaikh Abdul Hannan, K. V. Kale, “Comparison of PCA and SVM for a west Indian Script-Gujarati”, CiiT Journal of Digital Image Processing, Vol. 3. No. 11, pp. 709-715, July 2011.
9. Grimson, J.; Stephens, G.; Jung, B.; Grimson, W.; Berry, D.; Pardon, S. Sharing health-care records over the Internet. IEEE Internet Comput. 2001, 5, 49–58, doi:10.1109/4236.935177.
10. Lee, H., Kim, S., Park, J., & Lee, K. (2019). Deep learning-based classification of cancer types using gene expression data. Bioinformatics, 35(14), 2403-2410.
11. Daniels, M.; Schroeder, S.A. Variation among physicians in use of laboratory tests II. Relation to clinical productivity and outcomes of care. Med. Care 1977, pp. 482–487, doi:10.1097/00005650-197706000-00004.
12. Shaikh Abdul Hannan, Pravin Yannawar, R.R. Manza and R.J. Ramteke, “Expert System Data Collection Technique for Heart Disease”, in International Journal of Innovative Research in Science and Techniques (IJIRST), Vol 1, No.1 , Jan – June 2010, PP 31-35, ISSN:2229-3116,India.
13. Shaikh Abdul Hannan, Ramesh Manza, R. J. Ramteke, ”Relationship between Heart Disease and Symptoms”, International Journal of Computational Intelligent, Vol. 3, No.2, July-December 2009, pp. 289-292, ISSN 0974-5807.
14. E. Comak, A. Arslan, I. Turkoglu, “A decision support system based on support vector machines for diagnosis of the heart valve diseases”, Computers in Biology and Medicine vol.37, pp.21–27, 2007.
15. Shaikh Abdul Hannan, V. D. Bhagile, R. R. Manza, R. J. Ramteke, "Diagnosis and Medical Prescription of Heart Disease Using Support Vector Machine and Feed forward Back propagation technique", International Journal on computer science and engineering, IJCSE – August 2010, Vol. 2, Issue 6, ISSN: 0975–3397.

16. Chen, Y., Li, Y., & Narayan, R. (2018). A survey of machine learning techniques and their applications in ophthalmology. Computer Methods and Programs in Biomedicine, 160, 1-14.
17. Wennberg, J.E. Dealing with medical practice variations: A proposal for action. Health Aff. 1984, 3, 6–32, doi:10.1377/hlthaff.3.2.6.
18. H. Uguz, A. Arslan, I. Turkoglu, "A biomedical system based on hidden Markov model for diagnosis of the heart valve diseases", Pattern Recognition Letters vol.28 pp.395–404, 2007.
19. Zhang, L., Tan, J., & Wei, Z. (2017). Deep learning in omics data analysis and precision medicine. Computational and Structural Biotechnology Journal, 15, 20-27.
20. Shaikh Abdul Hannan, V.D. Bhagile, R. R. Manza and R.J. Ramteke, "Expert System for Diagnosis and Appropriate Medical Prescription of Heart Disease Using Radial Basis Function", CiiT International Journal of Artificial Intelligent Systems and Machine Learning, August 2010, ISSN 0974–9667 & Online: ISSN 0974–9543.
21. Smellie, W.S.A.; Galloway, M.J.; Chinn, D.; Gedling, P. Is clinical practice variability the major reason for differences in pathology requesting patterns in general practice? J. Clin. Pathol. 2002, 55, 312–314, doi:10.1136/jcp.55.4.312.
22. Stuart, P.J.; Crooks, S.; Porton, M. An interventional program for diagnostic testing in the emergency department. Med J. Aust. 2002, 177, 131–134.
23. Shaikh Abdul Hannan, R.R. Manza and R.J. Ramteke, "Heart Disease relationship between Disease, Symptoms, Medicine and its side effects", Journal of Advance Research In Computer Engineering: An International Journal ", July to December 2009, Serials Publication, New Delhi, India, ISSN 0973-6794.
24. Shaikh Abdul Hannan, V. D. Bhagile, R. R. Manza, R. J. Ramteke, "Diagnosis and Medical Prescription of Heart Disease Using Support Vector Machine and Feed forward Back propagation technique", International Journal on computer science and Information Security, – August 2010, Vol. 2, Issue 6, ISSN: 0975–3397.
25. Mir Arif Ali, Shaikh Abdul Hannan, "A Review on Modern and Classical Encryption Techniques", International Journal of Engineering Trends and Technology, Volume 12, Number 4, June 2014, ISSN 2231-5381, India.
26. Shaikh Abdul Hannan, Bharatratna P. Gaikwad, Ramesh Manza, "Brain Tumor from MRI Images : A Review". International Journal of Scientific and Engineering Research (IJSER), Volume 5, Issue 4, April-2014 ISSN 2229-5518, France.
27. Satish Misal, Shaikh Abdul Hannan, Santosh Lomte, "Comparative study of image processing Techniques on Geometrical shapes", International Journal of Emerging Technology & Advanced Engg., An ISO 9001:2008 Certified International Journal, Vol 2, Issue 9, New Delhi.
28. Shaikh Abdul Hannan, "Heart Disease Diagnosis by using FFBP and GRNN algorithm of Neural Network", International Journal of Computer Science and Information Security, Vol 12, Number 6, June 2014, ISSN 1945-5500, United States of America.
29. Anupriya Kamble, Abdul Hannan, Yogesh, Dnyaneshwari, "Association Detection of Regular Insulin and NPH Insulin Using Statistical Features", Second International Conference on Cognitive Knowledge Engineering, 21-23 December 2016 (ICKE-2016) , Aurangabad, Maharashtra, India ISBN 978-93-80876-89-4.
30. Shaikh Abdul Hannan, "An Overview of Big Data and Hadoop", International Journal of Computer Application", Volume 154, Number 10, ISSN – 0975-887, November 2016, New York, USA.
31. Mahammed Waseem, Naushad Ahmed Osmani, Shaikh Abdul Hannan, " A Survey on E-education of information and Communication 'Technology", European Journal of Computer Science and Information Technology (EJCSIT), Vol. 4, Issue 6, ISSN 2054-0965, October 2016.
32. Santosh K. Maher, Sumegh Tharewal, Abdul Hannan, K. V. Kale "Review on HRV based Prediction and Detection of Heart Disease" International Journal of Computer Application(IJCA), Vol. 179, Number 46, June 2018, ISSN 0975-8887, USA.
33. Yogesh, Abdul Hannan, Rahul Sagar, Kishor Jave, Identification and Counting Trees from Oil Palm Plantations Using Digital Image Processing Techniques, International Journal of Engineering Research & Technology (IJERT), Vol. 6 Issue 05, May – 2017, ISSN: 2278-0181.
34. Shaikh Abdul Hannan and Mir Arif Ali, "Analysis of Polyalphabetic Transposition Cipher Techniques used for Encryption and Decryption", International Journal of Computer Science and Software Engineering (IJCSSE), Volume 6, Issue 2, February 2017, Dubai, UAE.
35. Yogesh, Ramesh Manza, Anupriya Kamble Shushil G., Abdul Hannan, "Novel Approach for person identification Based on Iris Statistical Features and Retinal Blood Vessels Bifurcation points, Second International Conference on Cognitive Knowledge Engineering, 21-23 December 2016 (ICKE-2016) , Aurangabad, Maharashtra, India. ISBN 978-93-80876-89-4.

IJIRIS:: ©2014-20, AM Publications, India - All Rights Reserved

36. Pölsterl, S.; Conjeti, S.; Navab, N.; Katouzian, A. Survival analysis for high-dimensional, heterogeneous medical data: Exploring feature extraction as an alternative to feature selection. Artif. Intell. Med. 2016, 72, 1–11, doi:10.1016/j.artmed.2016.07.004.
37. Dick, R.S.; Steen, E.B.; Detmer, D.E. The Computer-Based Patient Record: An Essential Technology for Health Care; National Academies Press: Washington, DC, USA, 1997.
38. Santosh Maher, Shaikh Abdul Hannan, Sumegh Tharewal, K. V. Kale " HRV based Human Heart Disease Prediction and Classification using Machine Learning " December 2019, (Vol. 17 No. 2 International Journal of Computer Science and Information SecApplicatiion (IJCA), New York, USA.
39. Akram Ablsubari, Shaikh Abdul Hannan, Mohammed Eid Alzaharani, Rakesh Ramteke, "Composite Feature Extraction and Classification for Fusion of Palmprint and Iris Biometric Traits", Engineering Technology and Applied Science Research, (ETASR) Volume 9, No 1, Feb 2019, ISSN: 2241-4487, Greece.
40. Y. M. Rajput, Shaikh Abdul Hannan, Mohammed Eid Alzahrani, R. R. Manza, Dnyaneshwari D. Patil, "EEG-Based Emotion Recognition Using Different Neural Network and Pattern Recognition Techniques – A Review" Vol 7, Issue 1, Jan 2019, E-ISSN: 2347-2693, India .
41. Yogesh Rajput, Shaikh Abdul Hannan, Mohammed Eid Alzaharani, D. Patil Ramesh Manza, Design and Development of New Algorithm for person identification Based on Iris statistical features and Retinal blood Vessels Bifurcation points" " International Conference on Recent Trends in Image Processing & Pattern Recognition (RTIP2R), December 21-22, 2018, India.
42. Zhuang, Z.Y.; Churilov, L.; Burstein, F.; Sikaris, K. Combining data mining and case-based reasoning for intelligent decision support for pathology ordering by general practitioners. Eur. J. Oper. Res. 2009, 195, 662–675, doi:10.1016/j.ejor.2007.11.003.
43. Yogesh Rajput, Shaikh Abdul Hannan, Design New Wavelet Filter for Detection and Grading of Non-proliferative Diabetic Retinopathy Lesions, International Conference on Recent Trends in Image Processing and Pattern Recognition, Jan 2020, Springer, Singpore.
44. Anupriya Kamble, Shaikh Abdul Hannan, Ramesh Manza and Mohammad Eid Alzahrani, "Prediction of Prediabetes, No Diabetes and Diabetes Mellitus -2 usnig Simple Decision Tree Classification" **Springer** FICR International Conference on Rising Threats in Expert Applications and Solutions. 2020 at IIS University, 17-19 Jan, 2020 Jaipur.
45. Sagar Vakhare, Ramesh Manza, Abdul Hannan Shaikh and Anubha Jain, "Time Series Analysis and Forecasting of Temperatures Records in Aurangabad District of Maharashtra", **Springer** FICR International Conference on Rising Threats in Expert Applications and Solutions. 2020 at IIS University, 17-19 Jan, 2020 Jaipur.
46. Anupriya Kamble, Shaikh Abdul Hannan, Yogesh Rajput and Ramesh Manza, "Prediction of Prediabetes, No Diabetes and Diabetes Mellitus-2 using Pattern Recognition", **Springer** FICR International Conference on Rising Threats in Expert Applications and Solutions. 2020 at IIS University, 17-19 Jan, 2020 Jaipur.
47. Mohammad Eid Alzaharani and Shaikh Abdul Hannan, "Diagnosis and Medical Prescription of Heart Disease Using FFBP, SVM and RBF",Page 6-15. , Issue,1, Vol 5, , KKU Journal of Basic and Applied Sciences, Mar 2019.
48. Huang, M.J.; Chen, M.Y.; Lee, S.C. Integrating data mining with case-based reasoning for chronic diseases prognosis and diagnosis. Expert Syst. Appl. 2007, 32, 856–867, doi:10.1016/j.eswa.2006.01.038
49. Yogesh Rajput, Shaikh Abdul Hannan, Dnyaneshwari Patil, Ramesh Manza "Design New Wavelet Filter for Detection and Grading of Non-Proliferative Diabetic Retinopathy Lesions" The 3rd International Conference on recent Trends in Image Processing and pattern recognition, **Springer** conference, Jan 2020, Aurangabad, Maharashtra, India.
50. Y. M. Rajput, A. H. Hannan, M. E. Alzahrani, R. R. Manza, D. D. Patil, "EEG-Based Emotion Recognition Using Different Neural Network and Pattern Recognition Techniques–A Review", International Journal of Computer Sciences and Engineering, Vol 6, Issue 9, Sep 2018.
51. P.I.J. Keeton, F.S. Schlindwein, "Application of Wavelets in DopplerUltrasound, vol. 17, number 1, MCB University Press, pp. 38–45,1997.
52. I.A. Wright, N.A.J. Gough, F. Rakebrandt, M. Wahab, J.P. Woodcock, "Neural network analysis of Doppler ultrasound blood flow signals: a pilot study, Ultrasound in Medicine & Biology vol.23,pp. 683–690, 1997.