

A Study on Scope of Artificial Intelligence in Diagnostic Medicine

**Mr. S. P. Santhoshkumar¹, Dr. H. Lilly Beaulah²,
Mrs. K. Susithra³**

^{1,3}Department of Information Technology, Rathinam technical Campus, Anna University, Coimbatore, India.

²Head of the Department, Department of CSE, Mahendra College of Engineering, Anna University, Salem, India.

E-mail: ¹spsanthoshkumar16@gmail.com, ²lbeulah@gmail.com, ³susithras36@gmail.com

Abstract

Artificial Intelligence techniques are used to improve patient care and health systems. The use of machine learning and deep learning in healthcare is indeed prevalent, and it's fascinating to see how different medical data sources can be combined to diagnose diseases accurately. The variety of diseases that can be diagnosed using Artificial Intelligence (AI) techniques is impressive, and it's interesting to note that different medical imaging datasets are used for feature extraction and classification to make predictions. This highlights the potential of AI in healthcare to assist healthcare providers in identifying diseases and providing appropriate treatments. It is also encouraging to see that AI can enhance the patient experience in hospitals and speed up rehabilitation at home. This can help to improve patient outcomes and reduce healthcare costs. Overall, it's evident that AI has the potential to revolutionize the healthcare industry and improve patient care. As the technology continues to evolve, it will be interesting to see how it is further applied in healthcare and the impact it has on patient outcomes. In this study, the scope of AI in diagnostic medicine has been analysed and summarized.

Keywords: AI applications in healthcare, Artificial Intelligence in healthcare market, Artificial Intelligence in medical science, Use of Artificial intelligence.

1. Introduction

The adoption of cutting-edge digital technologies like Artificial Intelligence (AI), 3D printing, robotics, and nanotechnology is causing a rapid change in the healthcare sector. AI, in particular, has been gaining a lot of attention in the healthcare industry for its potential to improve patient outcomes and reduce costs [6]. To create new clinical systems, enhance patient data and records, and identify various illnesses, AI techniques like machine learning and deep learning are being used. Healthcare professionals can use AI to analyze massive amounts of medical data, spot patterns and trends, and improve patient care choices [7]. AI can also be used to identify high-risk behaviors and demographic areas where the frequency of illness is high. This information is used to develop targeted interventions and preventive measures to improve population health outcomes [8]. By enhancing patient outcomes, lowering costs, and allowing more individualized and effective care, the integration of AI and other cutting-edge digital technologies has the potential to completely transform the healthcare sector.

Although AI has the potential to revolutionize healthcare, there are also considerable obstacles and possible dangers that must be taken into consideration. Making sure AI algorithms are trained on representative and impartial data is one of the most difficult tasks because it prevents biases and health disparities from being perpetuated [9]. Additionally, integrating and reconciling the vast amount of healthcare data available is a significant technical challenge. It's also essential to establish best practices for the ethical and responsible use of AI in healthcare [10]. This includes ensuring patient privacy and data security, as well as developing effective risk assessment and quality control measures to prevent diagnostic errors and other potential harms [11]. While AI has the potential to transform healthcare, it is essential to approach its development and implementation thoughtfully and responsibly to ensure that it benefits patients and improves outcomes without creating new risks or exacerbating existing ones [12].

2. Current Use of AI

AI is currently used in many different applications and industries. Here are some examples of where it is used today:

- a) Healthcare:** AI is used in various healthcare applications, such as medical diagnosis, drug development, personalized treatment, and patient monitoring.
- b) Finance:** AI is used in financial applications such as fraud detection, algorithmic trading, and credit scoring.
- c) Transportation:** AI is used in self-driving cars, traffic optimization, and logistics management.
- d) Customer Service:** AI-powered chat bots are used to provide customer support and automate customer interactions.
- e) Entertainment:** AI is used in the entertainment industry to create personalized recommendations for movies, TV shows, and music.
- f) Education:** AI is used in the education sector to personalize learning experiences and provide targeted recommendations to students.
- g) Manufacturing:** AI is used in manufacturing to optimize processes, improve quality control, and predict maintenance needs.
- h) Agriculture:** AI is used in agriculture to improve crop yield and efficiency, as well as to monitor crop health.

These are just a few examples of where AI is used today. In the future, it's possible that AI technology will be used in even more applications and industries as it develops and gets better.

3. AI Involved in the Field of Medicine

In the field of medicine, AI has shown tremendous promise, especially in the area of disease diagnosis. AI has the potential to help healthcare professionals spot diseases and offer the best treatments because of its capacity to analyze enormous amounts of data swiftly and accurately. Some examples of AI in medical diagnosis include:

- a) Image Recognition:** AI can examine medical images like X-rays, CT scans, and MRIs to look for changes or anomalies that might be signs of illness. For instance, AI has been used to identify skin cancer on dermoscopic pictures and lung cancer on chest X-rays.
- b) Natural Language Processing (NLP):** AI is used to analyze written or spoken language to identify patterns or anomalies that could indicate disease. In order to spot patients who are at risk for sepsis and to find early indications of Alzheimer's disease in speech patterns, NLP is used to examine electronic health records.

c) Machine Learning: AI is trained on large datasets of patient data to learn patterns and make predictions about disease. Sepsis onset prediction, heart failure risk assessment, and diabetic retinopathy detection from retinal pictures are accomplished with the aid of machine learning.

d) Genomics: AI can analyze genetic data to identify mutations or variations that could indicate disease risk. AI is used to identify genetic markers for breast cancer and to diagnose rare genetic disorders.

The application of AI to medical diagnosis has the ability to increase the precision and speed of disease diagnosis, improving patient outcomes and lowering healthcare expenses. However, it's important to note that AI is not a replacement for human expertise and should be used as a tool to assist healthcare providers in making diagnoses and treatment decisions.

4. Use of AI in Diagnostic Medicine

The use of AI in medical diagnosis has the ability to revolutionize the healthcare industry by improving medical workflows, management, automation, and decision-making. Furthermore, it can assist in making important patient care decisions and identify a number of diseases. AI is particularly useful in medical imaging because it can prioritize life-threatening cases, prioritize critical findings, emphasize acute abnormalities, and assist radiologists in identifying them. AI is also capable of predicting the outcomes of strokes, helping to control chronic conditions, and helping to identify cardiac arrhythmias. Thanks to its vast array of data, algorithms, analytics, deep learning, neural networks, and insights, AI is continuously evolving and adapting to the needs of the healthcare business and patients. The standards of medical care may alter as result of this. The use of AI in healthcare is indeed rapidly evolving and has the potential to revolutionize the industry. AI technologies can help in various areas of healthcare, including diagnosis, treatment, drug discovery, personalized medicine, and disease management [1]. AI swiftly and accurately analyzes large amounts of data, which can aid healthcare professionals in making better decisions. This is one of the technology's key advantages. AI, for instance, can help with the interpretation of medical pictures like X-rays, CT scans, and MRIs to

find diseases earlier. Additionally, it can assist in determining possible drug targets and forecasting the effectiveness of various treatments for particular patients [2].

Moreover, AI can improve patient outcomes and reduce healthcare costs by enabling more precise diagnoses, reducing medical errors, and optimizing treatment plans. AI can also help healthcare providers to manage patient data and automate administrative tasks, which can reduce the workload of healthcare professionals and free up more time for patient care [3]. Even though AI has enormous promise for improving healthcare, there are some obstacles that need to be overcome. Assuring the confidentiality and privacy of patient data is one of the major challenges. Concerns about the ethical ramifications of applying AI to healthcare, such as assuring accountability and transparency, are another issue [4].

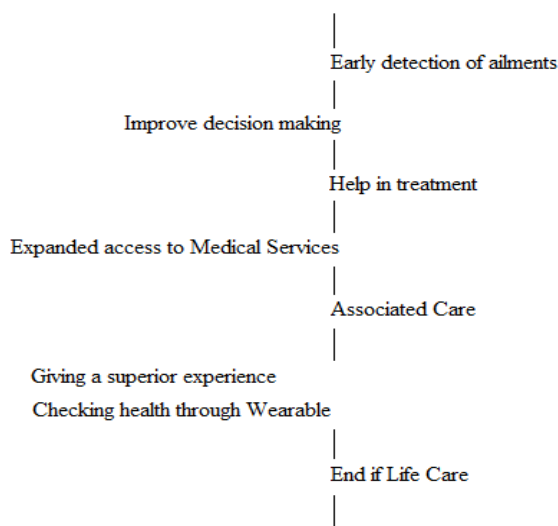


Figure 1. Uses of AI in diagnostic medicine

a) Early Detection of Ailments

AI has the ability to greatly enhance the diagnosis and care of many diseases, such as cancer and heart disease. AI can analyze large amounts of data quickly and accurately, which can assist healthcare workers in making more informed decisions about diagnosis and treatment. This is one of the main benefits of using AI in healthcare [1]. AI can assist in lowering the number of erroneous positives and false negatives in mammograms, which can prevent needless biopsies or missed diagnoses. AI can help detect potential tumours at an early stage by accurately analyzing mammograms, which can increase the likelihood that therapy will be effective. Similar to this, wearables and other therapeutic devices paired with AI can support real-time patient health monitoring, assisting in the early detection and treatment of conditions like heart disease. Early interventions may result

from this, improving patient outcomes and lowering healthcare expenses. Overall, applying AI to healthcare has the ability to completely change how illnesses are identified and treated [1].

b) Improve Decision Making

AI can use past health data of patients to identify those who may be at risk for a condition, and assist healthcare professionals in making more informed decisions. This often is referred to as predictive analytics or risk stratification. By analyzing large amounts of patient data, including medical history, lab results, and other health indicators, AI algorithms can identify patterns and factors that may indicate a higher risk for a particular condition. This can help healthcare professionals prioritize their efforts and resources, such as conducting screenings that are more frequent or interventions, for patients who are at higher risk [5]. Additionally, AI can help healthcare professionals make more accurate and personalized treatment decisions by providing insights based on individual patient data. For instance, based on a patient's medical history and other health factors, AI can assist in identifying the most suitable treatment choices. Overall, by giving medical workers more precise and personalized insights, the use of AI in healthcare can help to improve the quality and effectiveness of patient care. The use of AI must be done properly and ethically, with the right precautions taken to protect patient privacy, and guarantee accuracy and fairness in decision-making.

c) Help in Treatment

AI can use patients' medical records to identify those who are at higher risk for certain conditions, including heart disease, stroke, and other chronic conditions. By providing healthcare professionals with this information, AI can help them develop more effective treatment plans and interventions to improve patient outcomes. In addition to AI, robots have been used in healthcare for a variety of tasks for more than 30 years. Some of the most common uses of robots in healthcare include assisting with surgical procedures, performing routine tasks such as cleaning and delivering supplies, and providing physical assistance to patients in rehabilitation. Robots can also be used to help patients with chronic conditions manage their symptoms and improve their quality of life [6]. Robots can be programmed to do things like provide physical therapy exercises, remind patients to take their medicine on time, or help with daily chores like dressing or meal preparation. In general, utilizing AI and robots in healthcare has the potential to increase patient care's

effectiveness and quality, while also lowering expenses and expanding access to care. But it's crucial to make sure that these technologies are used sensibly and morally, with the proper security measures in place to secure patient privacy and guarantee accuracy and justice in decision-making.

d) Expanded Access to Medical Services

Robotics and AI could help patients receive better end-of-life care while lessening the strain on healthcare networks. People are more likely to develop chronic illnesses as they age, necessitating ongoing care and assistance. Robots can assist in delivering this care in a more effective and individualized manner, encouraging patient autonomy and independence [7]. For example, robots are used to remind patients to take medication, monitor vital signs, or provide assistance with daily activities such as bathing and dressing. Additionally, robots can help reduce the need for hospitalization and care homes by providing in-home care and support for patients.

The patient's quality of life may be enhanced by able to live in his or her own house, the burden on healthcare systems may be lessened by a decrease in hospital admissions, and nursing home stays. Overall, the use of robots and AI in end-of-life care has the potential to enhance patient quality of life, lower healthcare expenses, and encourage independence and autonomy [8]. The use of these technologies must be ethical and responsible, with the proper security measures in place to protect patient data and guarantee accuracy and fairness in decision-making.

e) Associated Care

Healthcare is a complex ecosystem that involves a variety of healthcare professionals and staff working together to deliver high-quality care to patients. To improve healthcare, it is important to look at the entire ecosystem and identify areas for improvement [4]. One way that AI and other technologies can help improve healthcare is by creating centralized systems that can monitor and analyze clinical and operational data in real-time. This can help healthcare organizations identify areas of high demand, bottlenecks in the system, and areas where resources may be underutilized. Healthcare organizations can make better choices about how to allocate resources and boost efficiency by using AI to analyze this data. AI, for instance, is used to forecast patient demand for particular treatments or services, enabling hospitals to staff appropriately and cut down on wait periods. AI is used to analyze electronic health records to find patients who are at risk for particular conditions, enabling medical professionals to take action sooner and stop the progression

of health issues. Overall, the application of AI and other technologies in the medical field can help to increase the efficacy and efficiency of healthcare delivery, as well as lower costs and produce better patient outcomes. However, it's crucial to make sure that these technologies are utilized responsibly, ethically, and with the right precautions in place to secure patient confidentiality.

f) Giving a Superior Experience

The total patient and staff experience in healthcare can be enhanced with the aid of artificial intelligence and other technologies. Healthcare organizations can decrease wait times and increase efficiency, which can increase patient happiness, by automating specific tasks and streamlining workflows. For instance, chat bots powered by AI is used to plan appointments, respond to common queries, and offer basic medical guidance, which can decrease wait times and enhance patient access to care [4]. Similar to how it is used to automate administrative duties like managing electronic health records or filing insurance claims, AI can also be used to streamline staff workloads so that they can concentrate more on patient care. AI in clinical practice can help clinicians learn new skills and enhance their capacity to recognize and treat complex medical conditions, in addition to enhancing the experience of both patients and staff. To find abnormalities that may be challenging for human clinicians to spot, AI is used to analyze medical images like CT scans or MRIs. This could contribute to more accurate diagnosis and better treatment results. In general, implementing AI and other technologies in healthcare has the potential to enhance patient satisfaction, streamline processes, assist clinicians in learning new skills, and enhance patient outcomes. However, it's crucial to ensure that these technologies are used sensibly and morally, with the proper safeguards in place to protect patient anonymity and guarantee accuracy and justice in decision-making [3].

g) Checking Health Through Wearables

AI is used to analyze sensor data from wearables and other devices to give users a better grasp of their health and fitness. AI algorithms can provide insights into how certain lifestyle factors, such as diet and exercise, are affecting a person's health and help spot patterns in the data that may be challenging for a person to notice on their own [6]. For instance, AI can examine wearable data to assist people in establishing personalized exercise goals, monitoring their progress, and receiving feedback and suggestions on how to enhance their performance. AI can also be employed to identify possible health issues

earlier, such as changes in sleep patterns or irregular heartbeats, and then offer suggestions on how to handle them before they worsen. AI is used to evaluate population-level data and find trends and patterns in health and disease, in addition to assisting people in keeping track of their own health [7]. In order to address the most important health problems in a particular population, healthcare organizations may be able to create more effective prevention and treatment strategies and as a result allocate resources more effectively. Overall, applying artificial intelligence to the analysis of health and fitness data has the potential to enhance personal health results and provide information for more efficient public health initiatives. However, it's crucial to guarantee that this data is gathered and analyzed in a responsible and ethical way, with adequate safeguards in place to protect individual privacy and guarantee that the data is used for its intended purpose.

h) Expanded Access to Medical Services

By taking over some of the routine tasks that are usually carried out by human healthcare providers, AI can serve to mitigate the effects of the shortage of qualified healthcare staff in developing nations. The analysis of medical images like X-rays and ultrasounds using AI algorithms, for instance, is used to spot possible health problems and suggest further treatment. As a result, human radiologists and other healthcare workers may have less work to do, freeing them up to concentrate on cases that are more complicated and call for their specialization. AI can also be used to assist telemedicine and remote medical consultations, enabling patients in underserved or remote areas to receive medical services without having to travel far. Virtual assistants and chatbots driven by AI can offer fundamental healthcare services [8], while more advanced AI systems can help to triage patients and prioritize those who need urgent care. In general, the use of AI in healthcare has the potential to increase access to life-saving care in underserved areas and developing nations where there may not be enough qualified medical experts [9]. To make sure that these AI systems are secure, efficient, and fair for all patients, it is crucial to make sure they are meticulously planned and put into place with the right supervision and training.

5. Applications of AI in Medicine

a) Medical Imaging:

Medical professionals are using AI to assist them in accurately and swiftly interpreting images from tests like X-rays, CT scans, and MRIs. Radiologists can discover and

diagnose diseases like cancer with the help of AI algorithms that can recognize and highlight suspicious regions in images.

b) Drug Discovery and Development:

The process of finding new drugs is accelerated with the aid of AI. To find possible drug targets and forecast the efficacy and safety of new medications [15], AI algorithms can analyze enormous amounts of medical and scientific data. As a result, making novel treatments can consume less time and money.

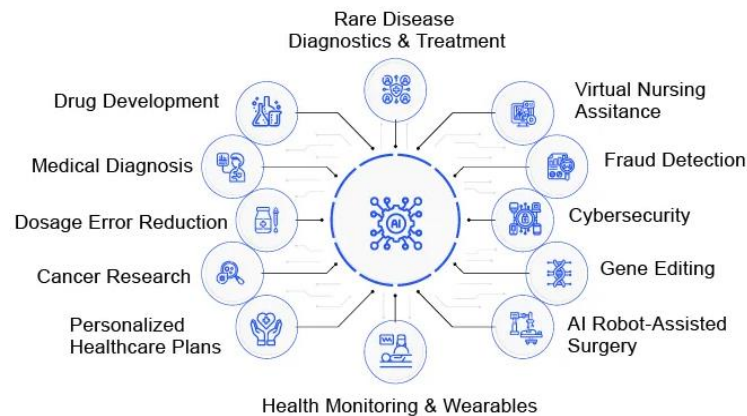


Figure 2. AI Applications in Healthcare [16]

c) Personalized Medicine:

In order to better handle each patient individually based on his or her distinct characteristics, AI is used. In order to determine which treatments will be most successful for a patient, AI algorithms can examine that patient's medical history, genetics, way of life, and other variables.

d) Medical Chat Bots:

Chat bots that can give patients individualized medical guidance and information are developed using AI. Patients can use these chat bots to quickly find answers to their medical queries, classify symptoms, and get guidance on when to seek additional medical attention. Healthcare providers can handle patient loads and treat more patients by using chat bots.

6. Future of AI in Diagnostic Medicine

AI has a promising and open future in the analytical medical field. AI has the potential to completely change how diseases are identified and treated due to its ability to process

enormous amounts of data rapidly and accurately. AI can help healthcare professionals make better choices by giving them real-time information about a patient's condition. It can assist in locating early symptoms of illnesses that people might miss, like some cancers. AI can also make it possible for treatments to be more precise and customized to the individual requirements of each patient. As AI technologies advance, more people will likely be able to take advantage of them as they become cheaper and widely available. This could result in significant improvements in healthcare quality overall, especially in underdeveloped regions where access to medical experts is scarce.

7. AI in Diagnostics to Enhance Efficiency and Accuracy of Clinical Decisions

Clinical decision-making, especially in the field of medical diagnostics, has the potential to significantly improve in terms of accuracy and efficiency. AI systems can aid in accelerating diagnosis, lowering errors, and enhancing patient outcomes by analyzing vast amounts of patient data and spotting patterns and correlations that human clinicians might overlook. Using AI for image processing in radiology is one instance of this. AI systems can assist in identifying abnormalities that may be overlooked by human doctors, by analyzing medical images like X-rays, CT scans, and MRIs. In order to help with therapy planning and monitoring, these systems can also provide automated measurements and analysis of image features, such as tumor size and volume. Analyzing Electronic Health Records is another area where AI can help with diagnosis. AI systems can help spot patterns and risk factors linked to specific diseases and conditions by analyzing vast amounts of patient data. They can then offer individualized suggestions for treatment and prevention. Overall, the application of AI to diagnostics has the ability to significantly improve the speed and precision of clinical decision-making, resulting in better patient outcomes and more effective use of healthcare resources [13].

8. AI Experts Provide Insights into its Successful Implementation

Any industry, including healthcare, needs a mix of technical expertise, domain knowledge, and efficient project management to apply AI successfully. Here are some suggestions from AI professionals on what is required for effective execution [13]:

a) Clear Goals and Well-Defined Problem: The issue that needs to be solved and the objectives that need to be met must both be understood clearly before implementing an AI

solution. Specifically defining the duties for which the AI system will be used as well as the data sources required to train the system are all part of this process.

b) Data Quality and Availability: Effective training of AI systems requires a lot of high-quality material. It is crucial to make sure that the data used to train the system is inclusive of a wide variety of cases and is a representative of the patient community.

c) Robust AI Algorithms: The effectiveness of the system depends on the AI algorithms chosen. The selected algorithms must be reliable and adaptable enough to handle the complexity of healthcare data, as well as to new data and shifting clinical requirements.

d) Expert Domain Knowledge: A thorough knowledge of the clinical domain, including disease pathology, available treatments, and patient outcomes, is necessary for successful AI implementation. Healthcare professionals and experienced clinicians can offer this crucial domain expertise.

e) Collaboration Between Clinicians And AI Experts: For implementation to be effective, clinicians and AI specialists must work together. While AI specialists can offer technical expertise and domain-specific knowledge, clinicians can offer insights into clinical workflows and patient needs.

f) Ethical Considerations: As the use of AI in healthcare increases, it is crucial to take ethical issues like data privacy, bias, and openness into account. To guarantee that the system is secure and helpful for patients, a clear ethical framework for AI implementation is crucial.

g) Continuous Evaluation And Improvement: AI systems must be evaluated and improved continuously if they should continue to be useful over time. This entails ongoing system training, performance assessment, and, as necessary, algorithm and workflow improvement.

AI can be effectively applied in healthcare to improve efficiency and accuracy in clinical decision-making by including these crucial components[14].

9. Conclusion

In summation, AI in healthcare has a bright future, and in the years to come, more healthcare providers implementing AI technologies can be anticipated. While AI won't replace human clinicians, it will surely support their efforts and improve their capacity to

deliver high-quality patient care . By enhancing patient outcomes, decreasing mistakes, and lowering expenses, AI has the potential to completely transform the healthcare sector. In the upcoming years, it's anticipated that the use of AI technologies like machine learning, deep learning, robotics, and 3D printing will increase, opening up previously unimaginable possibilities for medical research and diagnosis. But there are also difficulties that need to be resolved, such as data integration issues, moral dilemmas, and possible privacy and patient safety risks. The AI community must work with healthcare professionals to create best practices and guidelines for the moral and efficient application of AI technologies if the benefits of AI in healthcare are to be fully realized. AI has the potential to transform healthcare and enhance patients' lives globally with careful thought and collaboration .

References

- [1]Data Flair, "Importance of AI in Healthcare Sector", <https://data-flair.training/blogs/ai-in-healthcare-sector/>, 2022.
- [2]Yiming Zhang, Ying Weng, Jonathan Lund, "Applications of Explainable Artificial Intelligence in Diagnosis and Surgery", *Diagnostics*, <https://doi.org/10.3390/diagnostics12020237>, January 2022.
- [3]Humesh Verma , Abhishek Verma , Ankit Mishra, 2022, Theoretical Review on Artificial Intelligence used in the Medical Sector, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) Volume 11, Issue 12 (December 2022).
- [4]Yogesh Kumar, Apeksha Koul, Ruchi Singla, Muhammad Fazal Ijaz, "Artificial intelligence in disease diagnosis: a systematic literature review, synthesizing framework and future research agenda", *Journal of Ambient Intelligence and Humanized Computing*. 13th January 2022, pp. 1–28.
- [5]Markus Schmitt, Artificial Intelligence in Medicine - AI for Diagnostics, Drug Development, Treatment Personalisation and Gene Editing, *datarevenue*, <https://www.datarevenue.com/en-blog/artificial-intelligence-in-medicine>, 2022.
- [6]Zebene A, Årsand E, Walderhaug S, Albers D, Mamykina L, Botsis T, Hartvigsen G (2019) Data-driven modeling and prediction of blood glucose dynamics: Machine learning applications in type 1 diabetes. *Artif Intell Med* 98:109–134. <https://doi.org/10.1016/j.artmed.2019.07.007>.

- [7]Musleh M, Alajrami E, Khalil A, Nasser B, Barhoom A, Naser S (2019) Predicting liver patients using artificial neural network. *J Acad Inf Syst Res* 3:1–11.
- [8]Dabowsa N, Amaitik N, Maatuk A, Shadi A (2017) A hybrid intelligent system for skin disease diagnosis. In: *Conference on engineering and technology*, pp 1–6. <https://doi.org/10.1109/ICEngTechnol.2017.8308157>.
- [9]Vasal S, Jain S, Verma A (2020) COVID-AI: an artificial intelligence system to diagnose COVID 19 disease. *J Eng Res Technol* 9:1–6
- [10]Kaur H, Kumari V (2018) Predictive modelling and analytics for diabetes using a machine learning approach. *Appl Comput Inform.* <https://doi.org/10.1016/j.aci.2018.12.004>.
- [11]Gouda W, Yasin R (2020) COVID-19 disease: CT pneumonia analysis prototype by using artificial intelligence, predicting the disease severity. *J Radiol Nucl Med* 51:196. <https://doi.org/10.1186/s43055-020-00309-9>.
- [12]Abedi V, Khan A, Chaudhary D, Misra D, Avula V, Mathrawala D, Kraus C, Marshall KA, Chaudhary N, Li X, Schirmer CM, Scalzo F, Li J, Zand R (2020) Using artificial intelligence for improving stroke diagnosis in emergency departments: a practical framework. *Ther Adv Neurol Disord.* <https://doi.org/10.1177/1756286420938962>.
- [13]Simone Edelmann, "How artificial intelligence in diagnostics is transforming healthcare", *HealthcareTransformers - Actionable insights for executives*, <https://healthcaretransformers.com/digital-health/artificial-intelligence-diagnostics/>, 11 October 2021.
- [14]S. P. Santhoshkumar, H. Lilly Beaulah, Abdulrahman Saad Alqahtani, P. Parthasarathy, Azath Mubarakali, "A remote diagnosis of Parkinson's ailment using artificial intelligence based BPNN framework and cloud based storage architecture for securing data in cloud environment for the application of telecommunication technologies", *Computational Intelligence*, <https://doi.org/10.1111/coin.12508>, 15 February 2022.
- [15]S. P. Santhoshkumar, K. Susithra, T. Krishna Prasath3, "An Overview of Artificial Intelligence Ethics: Issues and Solution for Challenges in Different Fields", *Journal of Artificial Intelligence and Capsule Networks* (ISSN: 2582-2012), Volume 5, Issue 1, Pages 69-86, March 2023.

[16] Most Promising Applications of Artificial Intelligence (AI) in Healthcare Segment
<https://www.delveinsight.com/blog/top-applications-of-artificial-intelligence-in-healthcare>.