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AI and Iot Integrated Techniques for detection and prediction of brain diseases

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Abstract
Brain is the controlling centre of our body. Detection of brain diseases at an early stage can make a huge difference in attempting to cure them. The application of artificial intelligence (AI) in the assessment of medical images has led to accurate evaluations being performed automatically, which in turn has reduced the workload of physicians, decreased errors and times in diagnosis, and improved performance in the prediction and detection of brain diseases. The application of artificial intelligence (AI) technology in the medical field has experienced a long history of development. In turn, some long-standing points and challenges in the medical field have also prompted diverse research teams to continue to explore AI in depth.

With the development of advanced technologies such as the Internet of Things (IoT), cloud computing, big data, and 5G mobile networks, AI technology has been more widely adopted in the medical field. In addition, the in-depth integration of AI and IoT technology enables the gradual improvement of medical diagnosis and treatment capabilities so as to provide services to the public in a more effective way.

Keywords: Artificial Intelligence; Brain diseases; IoT; Machine Learning;

1. INTRODUCTION

One industry where IoT and AI, individually or together, are making significant impacts is the healthcare industry, which is constantly under pressure to reduce costs while addressing a rapidly growing unhealthy population. These technologies can help healthcare organizations tap into the potential of an increasingly interconnected and responsive world.

IoT devices such as smart pills, wearable monitors, and sensors allow healthcare practitioners to continuously collect data, and AI systems can help analyze this data to detect changes in a patient's condition, suggest treatment options, and identify trends, thus supporting patient adherence, improving patient outcomes, and accelerating discovery of and access to new treatments (Daecher et al., 2018; King 2017; Verweij et al. 2017).

2. PROBLEM DEFINITION

AI is the simulation of human processes by machines (computer systems) and that this simulation includes learning, reasoning, and self-correction. We require AI since the amount of labour we must perform is rising daily. As a result, it's a good idea to automate regular tasks. It conserves the organization's staff and also boosts production.

Suppose doctors do not use ai techniques. In that case, it will cause a delay in treating the patients as it is tough to interpret the scanned image manually, and it also takes a considerable amount of time.

But, on the other hand, it shows that an AI technique helps the patients and helps the doctors save the patient's life by treating them as early as possible.

3. LITERATURE REVIEW

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AUTHOR	TITLE
Hadar (2018)	Hippocampal segmentation in temporal lobe epilepsy
Li (2020)	Cerebrovascular segmentation
Lee (2019)	AVM identification and quantification

4. GOAL

Today, physicians can diagnose and treat much more diseases than in the past. However, even after years of practice, they can still struggle to make the correct diagnosis efficiently. This is where technologies such as IoT and AI can play a key role in providing reliable support for determining a diagnosis and the best course of treatment.

AI technologies such as neural networks can quickly analyze the extensive amount of information available to physicians, streamline the diagnostic process, and help avoid mistakes by integrating both historical data and specific patient information.

5. OBJECTIVE

AI supports the healthcare sector by reducing the cost of clinical trials in terms of wasted human hours when developing new medicines. Beyond the medical factors of clinical safety, diagnosis and treatment options, AI solutions can boost patient experience by optimizing patient interaction workflows that are complicated by patient co-morbidities and ailments, insurance coverage matters and other environmental and situational conditions.

At the organizational level, AI can optimize healthcare data management by intelligently connecting the most important data points, thereby supporting accurate diagnosis, timely treatment and preventative measures that improve health outcomes.

6. RESULT

ML algorithms have many applications in various fields. As a subfield of AI in medical imaging analysis, ML is a promising and growing field. ML has broad applications in computer vision, computer-aided diagnosis, and image processing in detecting diseases.

As medical imaging has advanced with the introduction of new imaging techniques such as multiple incision CT, positron emission tomography, tomosynthesis, magnetic resonance imaging, tomography, and diffuse optical tomography, progressive ML methods are increasingly needed for medical imaging analysis.

CONCLUSION

Smart healthcare is a well-researched area. In the smart health care domain, there is a breadth of literature covering Iot, IoMT, medical signals, AI, edge and cloud computing at various rates and utilizing varied tactics. However, to the best of our knowledge, there was a lack of a thorough and systematic analysis of state-of-the-art Iot, IoMT, AI, medical signals use and fusion, edge and cloud computing, privacy and security in the smart health care domain.

The purpose of this survey was thus to offer a formal classification and specific comparative

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context for iot, iomt, ai, edge and cloud computing, privacy and security in smart health care.

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