

Artificial Intelligence (AI) in Perinatology: A State of the Art

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Artificial Intelligence is not new. It has been around for as long as computers have been around. However, now, the awareness and involvement of more people have made it sound like a new invention. It is a method of making a computer, a computer-controlled robot, or a software think intelligently like the human mind. The human brain/mind's thinking 10 bits/sec is supposed to process 30 bits/second (Wion news Dec 24, 2024). We know that it is much slower than computers, so anything we can involve computers to process things faster than are thought of or being done.

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There are four types: reactive machines, limited memory, theory of mind, and self-awareness. The common types of artificial intelligence in the medical field are mainly reactive machines, but limited memory is also being used more and more lately.

Examples of some types of AI in healthcare:

- 1) Machine learning
- 2) Natural language processing
- 3) Neural network
- 4) Diagnosis and treatment applications

- 5) AI in medical imaging
- 6) Robotics assisted surgery
- 7) Drug development

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Machine learning: The most common type of AI in healthcare, machine learning is used to predict treatment protocols and provide precision medicine. There are numerous examples of this already in the world around.

Natural language processing (NLP): NLP is used to interpret human language and help medical professionals understand patient records, identify health trends, and make better decisions. Public health uses quite a few of these in their interpretation of results.

Generative AI: Generative AI can create synthetic medical images to help doctors diagnose and predict treatment outcomes. This is being tried increasingly nowadays in oncology.

RPA: RPA automates repetitive, rule-based tasks, such as data entry, claims processing, appointment scheduling, and laboratory results management. The best example of this is the appointments given by the AI-integrated system of hospitals.

AI in medical imaging - AI can analyze large amounts of data quickly and accurately to improve disease detection and diagnosis, personalized treatment plans, and standardized image interpretation. The best example is the

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The advantages of Artificial Intelligence are:

- 1) Reduction in Human Error
- 2) Takes risks instead of Humans
- 3) Available 24x7
- 4) Helping in Repetitive Jobs
- 5) Digital Assistance
- 6) Faster Decisions
- 7) Daily Applications
- 8) New Inventions

What are the disadvantages of AI? Disadvantages include costly implementation, potential human job loss, and lack of emotion and creativity.

AI has been used increasingly in the travel industry— from checking in at the airports—where they use facial recognition and allow passengers to board planes, book tickets on the net, and so on. The use of AI in medicine has been slow and steady, with various hospitals, individuals, and organizations trying various things. The Journal of Perinatology published an article on their perspective titled in July 2023 by Kristyn Beam that the AI in the neonatal intensive care unit (NICU)—the time is now.

We have been working on AI in Cloudnine Hospitals for the last 5 years, and finally,

we think we have come up with some solutions for identifying the babies admitted to NICU who can be identified with sepsis by the algorithms at 12 hours of age rather than waiting for 72 hours for the cultures to be positive. This data is being collated as we speak and is being written up for publishing soon. We are also working on AI in the Hospital Management Systems (HMS) where AI can predict preterm births in a pregnant woman—in the pilot project we did with 300 women—AI predicted 80% of the preterm births vs the clinician prediction of about 22% - suggesting that there may be possibility of AI here—which has been expanded to wider population and numbers—watch this space—we may be able to predict preterm births and hopefully prevent them in the future. AI is here to revolutionize healthcare in a big way sooner rather than later.

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Contributions: RKK: Collected the requisite data. Prepared, edited, and finalised the manuscript.

Disclaimer: None

Funding: None

Competing Interests: None

Disclosure: The author has no conflicts of interests to disclose.

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