

## AI in Neonatology

Neonatologists deal with neonates that are known to deteriorate rapidly over the course of a few hours with no warning signals. Frequent observation may not always be able to determine which neonates in the newborn unit are at risk of dying. Spitzer's Laws of Neonatology's first law is "The more stable a baby appears to be, the more probable he will "crump" that day," which provides us an idea of the problems faced by neonatologists in managing sick babies. With the rising digitization of the NICU and the availability of numerous clinical indicators from monitors, etc., there is a wealth of information available that could help the neonatologist forecast the neonate at risk.

One of the goals of sustainable development is to reduce newborn mortality. Neonatal disorders (both congenital and acquired) have a better prognosis if discovered and treated early, but issues develop when they go unnoticed because to a lack of trained doctors, or because they were not diagnosed prenatally, or if the parents were unaware of the hazards. Healthcare technology such as teleconsultation and telemedicine are being employed to make specialised doctors easily accessible to patients in the periphery at low costs. In recent years, fresh technologies have emerged that can be utilised to capture the healthcare data generated every second, lowering healthcare costs and reducing the stress on the workforce, ultimately improving healthcare delivery.

AI is fast being integrated into healthcare now that it is being utilised in everyday life to execute tasks utilising automated data-driven judgments. The increased interest in neonatology may be attributed to the large amount of data collected at a high rate in Neonatal Intensive Care Units from various devices such as vital signs monitors, ventilators, and infusion pumps.

Vital monitoring, particularly oxygen saturation, is one of the most crucial aspects of newborn intensive care. An alarm is activated when the saturation falls outside of the set range. However, it has been discovered that the bulk of the alarms are incorrectly triggered as a result of the neonate's movement. Frequent false alarms can cause undesirable physical and psychological stress for parents, patients, and staff, thereby lengthening reaction times in the event of a true adverse occurrence. This is related to alarm fatigue Ostojic et al. used a machine learning algorithm to reduce false alarms, and they were able to reach a sensitivity and specificity of 87.52 percent and >99 percent, respectively.

While the ultimate goal of integrating AI and machine learning into healthcare is to improve delivery, there are some ethical concerns that must be addressed. The models learn from both human and machine-generated data, which could lead to the learning of negative traits such as discrimination based on race and sex, bias toward the group contributing more data, profit-generating decisions driven by the creators' personal agendas, and an increase in physicians' reliance on computers for clinical decisions. These issues may be addressed if the models were changed to identify known biases.

While much of the work on AI/ML has taken place in high-income nations due to the availability of knowledge, its implementation in low- and middle-income countries will result

in more lives being saved. Collaborations between individuals with expertise and those who require it must be formed in order to maximise the use of existing technologies. Countries with enormous populations, such as India and China, can provide a big number of data points, which can aid in the development or acceleration of AI/ML models and learnings. It's past time for us to gain a better knowledge of this technology and put it to work for our little miracles.

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