

Automated Classification of Hypoxia from Fetal Heart Rate Using Advanced Data Models of Intrapartum Cardiotocography

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Abstract : Uterine contractions produced during labour have the potential to damage the foetus by diminishing the maternal blood flow to the placenta. In order to observe this phenomenon labour and delivery are routinely monitored using cardiotocography monitors. An obstetrician usually makes the diagnosis of foetus hypoxia by interpreting cardiotocography recordings. However, cardiotocography capture and interpretation is time-consuming and subjective, often lead to misclassification that causes damage to the foetus and unnecessary caesarean section. Both of these have a high impact on the foetus and the cost to the national healthcare services. Automatic detection of foetal heart rate may be an objective solution to help to reduce unnecessary medical interventions, as reported in several studies. This paper aim is to provide a system for better identification and interpretation of abnormalities of the fetal heart rate using RStudio. An open dataset of 552 Intrapartum recordings has been filtered with 0.034 Hz filters in an attempt to remove noise while keeping as much of the discriminative data as possible. Features were chosen following an extensive literature review, which concluded with FIGO features such as acceleration, deceleration, mean, variance and standard derivation. The five features were extracted from 552 recordings. Using these features, recordings will be classified either normal or abnormal. If the recording is abnormal, it has got more chances of hypoxia.

Keywords : cardiotocography, foetus, intrapartum, hypoxia

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