Mobile CTG Fetal Heart Rate Assessment using Android Platform

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Cardiotocography measurement of fetal heart rate and uterine contractions is the prominent source of information about the fetal well-being in the late stages of pregnancy and during the delivery. With the stable increase of systematic costs of western medical systems and with the lack of trained personnel especially in the rural areas of BRIIC countries, telemedicine solutions are destined for large range of users.

In the paper we describe our proposed solution for mobile fetal heart rate monitoring and evaluation running on Android platform.

During the last weeks of pregnancy the frequency of periodic controls can increase up to 5 per week creating great burden on both mother and obstetricians. Based on our previous research dealing with automatic evaluation of the fetal heart rate recordings during the delivery we have developed a tool for monitoring and evaluation of the antepartum fetal heart rate based on the FIGO guidelines.

Any fHR recording device with bluetooth module and known data format can be prospectively connected to the phone as a data source. Currently our system works with the fHR recording module developed within the ENIAC-MAS project funded by the EU. After recording of at least 20 minutes the system performs signal preprocessing, including quality assessment and then automatically assesses the signal using among other features baseline of the fHR, long term variability and number of acceleration and decelerations. Alarms are raised if necessary and data are sent via internet to the clinicians database for more detailed analysis and confirmation. The clinician can remotely ask for additional measurement, if the first recording is inconclusive.

Additionally the application on the mobile Android device contains viewer of the signal that enables setting of customary thresholds levels for the analysis rules and gives user full control over the settings of the recording device.