FETAL R-WAVE DETECTION IN THE AMBULATORY MONITORING OF MATERIAL ABDOMINAL SIGNAL

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ACKNOWLEDGEMENT

ABSTRACT

In this project, a software for abdominal signal processing and displaying of maternal and fetal heart rates are implemented in real time. The software was developed by using the C programming language. However, the effectiveness of the software is only applicable to the ECG data of NA39 file only. Three experiments had been carried out on the abdominal signal to improve the reliability of the software. In the first experiment was a new subroutine was added to calculate and display the performance's percentage of both maternal and fetal signal detection. With this subroutine, the abdominal signal can be processed and the performance of the signal detection can be notified immediately. The second experiment had been done to the locations of QRS template points. This is to prove that the signal processing at the ECG data is dependent to the value of initial templates.

From the results, it shows that the value of initial template is dependent to the locations of QRS template points. However, it only applies to changes of locations for fetal template points only. Therefore, it is proven that the value of initial template will effect the effectiveness of the software. Further research on new location of fetal QRS template will perhaps give a better signal processing results for all five files. The third experiment is done to determine the flexibility of the software if changes to the value of maternal and fetal QRS template points were made. The result concludes that changes of template point value will caused a failure in signal processing of ECG data for most of the files.

The result proved that the existing number of template points is the best values to be used in the software. However, the experiment had been done to a limited scope of parameters. From the three experiments on the initial FETAL. C Software, the distribution process is targeted to give a higher software reliability and flexibility.

CONTENTS

INTRODUCTION

1.1 INTRODUCTION

The recent technological developments have influenced the increase in the use of sophisticated equipment's vastly, especially in the medical field and industry. For example, in medical field, various high-tech inventions are invented to simplify the job of medical researchers and practitioners. These inventions are needed especially to explore and investigate the problems in the medical world that needs detailed investigations and cannot be done at surface level.

The digital signal processing have gone through vast developments. This method is used greatly in doing signal analysis. Digital signal processing techniques is also widely used in the medical field. Normally, the digital signal processing is used to investigate psychological signals. The observation upon this signal helps to give information quickly to medical experts. The information can also help to find out the level of one's health quickly and effectively. For example, from the heart beat information we can know the condition of the heart . Any detection of complications can also be done easily.