Dedication

Dedicated with deepest love to: My beloved father, mother .

My dearest friends for being my side whenever I need them.

Acknowledgement

Firstly, I would like to thank Allah for his firm hands in guiding me in the course of completing this thesis writing. It is his grace and mercy that I am able to embark on the project.

Also,I want to thank my supervisors; Dr. Abd el rssol Jbar for his professional guidance, wisdom, endurance, advices, motivation and encouragement throughout the project.

Abstract

According to the World Health Organization report of 2010, 59% of deaths were the result of non-communal conditions. Of which, 29% of deaths were related to cardiovascular complications. approximately 10 million people in a year die resulting from cardiovascular complications[5].

Regardless of how many precautions are taken to prevent heart attacks, the fact remains that it is still the leading cause of death. Most heart attacks could be somewhat maintained if the patient is to receive the needed medical attention in time. However, not everyone knows what a heart attack is like or what to do in case of such an emergency; hence a lot of heart attacks amount to death due to either the patient not being aware or not being able to seek medical attention in sufficient time.

The Electrocardiogram (ECG) is an essential diagnostic tool that measure and record the electrical activity of the heart. A wide range of heart conditions can be detected when interpreting the recorded ECG signals. These qualities make the ECG a perfect instrument for patient monitoring and supervision. The commonly used ECG machine used for diagnosis and supervision at present is expensive.

This research is a study of the possibility of manufacturing a small sized ECG system capable of sending ECG signal via the serial port to a PC at low cost. It consists of an amplifier, filtering, microcontroller and LABVIEW as a platform for the signal monitoring.

التجريدة

وفقا لتقرير منظمه الصحه العالميه لعام 2010 ، 59% من حالات الوفيات بالعالم كانت لاسباب مرضيه ، 29% منها مرتبطه بامراض القلب .لتقريب لاصوره لهذه النسبه فانه تقريبا 15 مليون شخص يموتون سنويا بسبب أمراض القلب .

وبالرغم من الاحتياطات الكبيره التي تتخذها الدول المتقدمه ،الا انه تبقي الحقيقه الماثله ان النوبات القلبيه مازالت المسبب الرئيسي للوفيات هنالك .

يمكن معالجه الضرر الناتج من معظم النوبات القلبيه اذا ما تلقي المريض العنايه الطبيه اللازمه بالوقت الملائم .ومع ذلك للاسف لايعلم الجميع ماهي النوبه القلبيه ولذلك فاغلب الحلات التي تؤدي الي الموت حدثت بسبب ان المريض لم يتلمس ارهاصات حدوث هذه النوبه القلبيه وبالتالي لم يستطيع الوصول لمراكز العنايه الطبيه بالوقت الملائم .

جهاز رسم القلب هو عباره عن أداه اساسيه لقياس وتسجيل النشاطات الكهربائيه للقلب. يمكن الكشف عن مجموعه واسعه جدا من أمراض القلب بواسطه هذا الجهاز .

أغلب أجهزه القلب الموجوده حاليا بالاسواق غاليه الثمن ولايستطيع المرضي شرائها .

هذا البحث عباره عن دراسه لإمكانيه تصنيع جهاز رسم قلب صغير الحجم قادر علي إظهار إشارته علي شاشه الحاسوب وباقل تكلفه.

هذا الجهاز يتكون من مكبر ومرشحات ومتحكمه دقيقه بالاضافه لبرنامج رسومي يستخدم لعرض الاشاره المأخوذه من المريض بشاشه الحاسب .

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LIST OF ABBREVIATIONS

ADC	**A**nalogue to **D**igital **C**onverter
CTS	**C**lear **T**o **S**end
CPU	**C**entral **p**rocessing **u**nit
ECG	**E**lectro**c**ardio**g**ram/**E**lectro**c**ardi**o**graph
EEG	**E**lectro**E**ncephalo**G**ram
EMG	**E**lectro**M**yo**G**ram
LAN	**L**ocal **A**rea **N**etwork
MEG	**M**agneto**E**ncephalo**G**ram
GUI	**G**raphical **U**ser **I**nterface
GSR	**G**alvanic **S**kin **R**esponse
HRV	**H**eart **R**ate **V**ariability
OP	**Op**erational **A**mplifier
PC	**P**ersonal **C**omputer
PIC	**P**rogrammable **I**ntelligent **C**omputer
RAM	**R**andom **A**ccess **M**emory
REM	**R**andom **E**ye **M**otion
RS-232	**R**ecommended **S**tandard 232
Rx	**R**eceive **D**ata
RTS	**R**equest **T**o **S**end
SMD	**S**urface **M**ounted **D**evice
Tx	**T**ransmitted **D**ata