



AN EMBEDDED SENSOR BASED GRAPHICAL RECORD REASONING SYSTEM FOR ELDERLY PATIENTS

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ABSTRACT:

the rise within the range senior voters and chronic diseases, the amount of senior patients World Health Organization would like constant assistance has magnified. One key purpose of a less essential care for senior patient is that the continuous observation of their important signals. Among these, the electrocardiogram signal is employed for noninvasive designation of cardiovascular diseases. Also, there's a pressing ought to have a proper system in situ for patient identification. Errors in patient identification and therefore improper administration of medication can cause unfortunate results. This paper proposes a unique embedded mobile electrocardiogram reasoning system that integrates electrocardiogram signal reasoning Associate in Nursing RF identification along to observe a senior patient. As a result, our planned technique encompasses a sensible accuracy in heart beat recognition, and allows continuous observation and identification of the senior patient once alone. in order to examine and validate our projected system, we have a tendency to propose a social control research model to check whether or not it are often enforced in a very medical organization. The results prove that the quality, usability, and performance of our projected system have impacts on the user's angle, and there's a major positive relation between the user's angle and also the intent to use our projected system.

Keywords: *Electrocardiogram (ECG), Electrodes, temperature, heart rate, blood pressure.*

1. INTRODUCTION:

RELIABILITY MODELING

As already mentioned, the analyzed measure system could be an electrical phenomenon EKG system. Such a system is comparable to a customary semiconducting EKG with wet electrodes with the sole and main distinction, that the coupling between the electrodes and also the patient is electrical phenomenon and so forms high-pass filters. Therefore, an energetic conductor with a high impedance buffer is needed so as to attain an occasional cut-off frequency under one cycles/second. Since no semiconducting connection is required, measurements through garments square measure possible. It's been shown, that electrical phenomenon systems could achieve similar or perhaps higher results than commonplace EKG system.

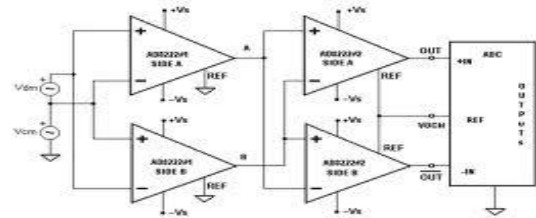


Fig:2 amplifier circuit for ECG monitoring

DESIGN IMPLEMENTATION

Instrumentation electronic equipment is sometimes the terribly initial stage in associate instrumentation system. this is often owing to the terribly little voltages typically received from the probes have to be compelled to be amplified considerably to be continuing stages. Associate instrumentation electronic equipment (IA) may be distinction electronic equipment wherever the distinction between the 2 input terminals is amplified and therefore the common signals between the inputs square measure rejected (Common Mode Rejection (CMR)). The latter perform is that the characteristic, termed the Common Rejection magnitude relation (CMRR). As delineated in Figure four, it generally consists of 3 op-amps [7]. though the instrumentation electronic equipment is sometimes shown schematically similar to a regular op-amp, the electronic instrumentation amp is nearly perpetually internally composed of three op-amps [13]. These square measure organized in order that there's one op-amp to buffer every

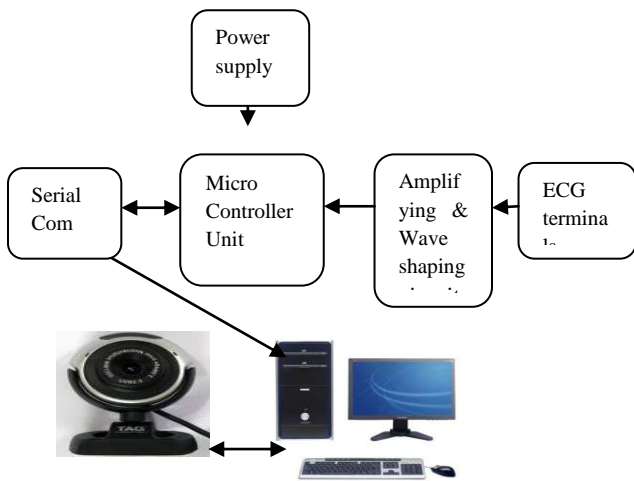


Fig:1 block diagram for ECG monitoring

input (+, -), and one to supply the specified output with adequate resistance matching for the perform. the foremost unremarkably used instrumentation electronic equipment circuit is shown within the figure four. The gain of the circuit is [7]. $V_{out} / V_2 - V_1 = (1 + 2R_2/R_1) R_4/R_3$ (1) The right electronic equipment, in conjunction with the resistors labeled R3 and R4 is simply the quality differential electronic equipment circuit, with gain = R_4 / R_3 and differential input resistance = $2 \cdot R_3$. the 2 amplifiers on the left square measure the buffers. With R1 removed (open circuited), they're easy unity gain buffers; the circuit can add that state, with gain merely up to R_4 / R_3 and high input resistance owing to the buffers. The buffer gain might be enlarged by swing resistors between the buffer inverting inputs and ground to shunt away a number of the negative feedback; but, the only resistance R2 between the 2 inverting inputs may be a rather more elegant method: it will increase the differential-mode gain of the buffer try whereas going the common-mode gain up to one. This will increase the common-mode rejection magnitude relation (CMRR)[7,11] of the circuit and conjointly permits the buffers to handle a lot of larger common-mode signals while not clipping than would be the case if they were separate and had an equivalent gain. Another advantage of the strategy is that it boosts the gain employing a single resistance instead of a try, therefore avoiding a resistor-matching downside (although the 2 R2s have to be compelled to be matched), and extremely handily permitting the gain of the circuit to be modified by dynamical the worth of one

resistance. a collection of switch-selectable resistors or perhaps a potentiometer is used for R1, providing straightforward changes to the gain of the circuit, while not the complexness of getting to change matched pairs of resistors

PCA for image compression

Human sees numerous people's face repeatedly in his life. Whenever they meet somebody, he remembers peculiar facial expression of that person with the feature extraction method instead of whole face. So they will recognize facial image naturally. Of course, this feature extraction method is unconscious activity and is unknown method to United States of America. In face profiles, the shape and size of eyes, nose, mouth and their relationship are unremarkably find this one. With correctly extracted options we are able to simply acknowledge humane face. However, shadow hair, glasses, and noise or rotation of a face might distort the face shape The task of recognition of human faces is sort of complex. The face is filled with data however working with all the data is time overwhelming and less economical. it's higher get distinctive and vital information and discards alternative useless data in order to create system economical. Face recognition systems will be wide utilized in areas wherever additional security is required. Like real time applications, Government organizations etc. Service and Kirby had efficiently delineated human faces mistreatment principal.

E)image recognition

image recognition – additionally referred to as pc vision – is that the methodology of deed, analyzing, and understanding pictures

to supply numerical data. In alternative words, image recognition could be a computer's means of doing what your eye does: see an image and comprehend it.

It is a difficult downside that's straightforward to require without any consideration. The human eye and brain are product of many voluminous years of evolution. That a lot of "product development" lets a personality's intuitively and straightaway distinguish a friend from a whole trespasser, the letter "M" from the letter "N," or the Greek deity brand from an easy check, even if these pictures are 90-99% identical. Each of those comparisons illustrates one amongst the 3 distinct image recognition technologies:

- Facial recognition;
- Optical character recognition (OCR);
- Pattern recognition.

Facial recognition focuses on detection faces and distinctive one face from another. If you've ever uploaded a photograph to Face book and been prompted to tag a specific face as a specific friend, you've got utilized biometric authentication technology. Optical character recognition focuses on detection text and "reading" it. If you've got ever deposited a check by taking an image, your bank has used OCR to browse the routing and account numbers on the check in order that it will transfer funds from the proper account. Pattern recognition is that the most fun sort of image recognition as a result of it's not restricted to sure styles of pictures. Whereas facial and optical character recognition will solely be wont to

acknowledge faces and text, severally, pattern recognition will acknowledge any pattern of pixels in the slightest degree. It notice generic objects like bicycles, terribly specific pictures just like the Coca-Cola brand, or maybe objects that are typically organized in numerous poses sort of a cartoon character. a physical feature has a small deviation amongst genuine banknotes and looks difficult to imitate



Fig:3 wave form generation for ECG monitoring

ECG MONITORING OVERVIEW

Electrocardiography (ECG or EKG from Greek: kardia, that means heart) may be a transthoracic (across the thorax or chest) interpretation of the electrical activity of the center over a amount of your time, as detected by electrodes hooked up to the surface of the skin and recorded by a tool external to the body.[1] The recording made by this noninvasive procedure is termed associate degree graphical record (also

electrocardiogram or EKG). An electrocardiogram is employed to live the heart's conductivity system.[2] It picks up electrical impulses generated by the polarization and depolarization of internal organ tissue and interprets into a wave. The wave is then accustomed live the speed and regularity of heartbeats, further because the size and position of the chambers, the presence of any harm to the center, and therefore the effects of medication or devices accustomed regulate the center, like a pacemaker. Most ECGs square measure performed for diagnostic or analysis functions on human hearts however might also be performed on animals, typically for designation of heart abnormalities or analysis. :

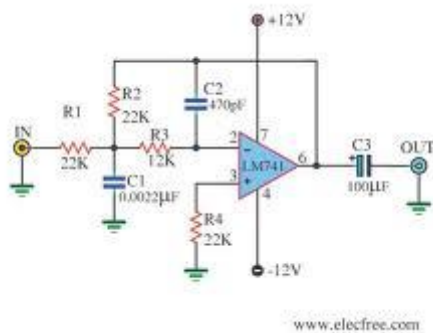


Fig: 4 low pass filter circuit

A low-pass filter could be a filter that passes low-frequency signals and attenuates (reduces the amplitude of) signals with frequencies on top of the cutoff frequency. the particular quantity of attenuation for every frequency varies reckoning on specific filter style. it's

generally referred to as a high-cut filter, or treble cut filter in audio applications. A low-pass filter is that the opposite of a high-pass filter. A band-pass filter could be a combination of a low-pass and a high-pass.

Low-pass filters exist in many various forms, together with electronic circuits (such as a hiss filter utilized in audio), anti-aliasing filters for acquisition signals before analog-to-digital conversion, digital filters for smoothing sets of knowledge, acoustic barriers, blurring of pictures, and so on. The moving average operation utilized in fields like finance could be a explicit quite low-pass filter, and might be analyzed with constant signal process techniques as area unit used for alternative low-pass filters. Low-pass filters give a sander kind of a symptom, removing the short-run fluctuations, and exploit the longer-term trend.

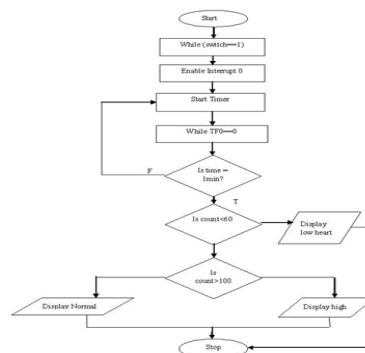
Design of Instrumentation electronic equipment

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distinction between the 2 input terminals is amplified and therefore the common signals between the inputs area unit rejected (Common Mode Rejection (CMR)). The latter operate is that the characteristic, termed the Common Rejection magnitude relation (CMRR). As represented in Figure four, it generally consists of 3 op-amps [7]. though the instrumentation electronic equipment is typically shown schematically a dead ringer for a typical op-amp, the electronic instrumentation amp is sort of continuously internally composed of three op-amps [13]. These area unit organized in order that there's one op-amp to buffer every input (+, -), and one to supply the required output with adequate electrical resistance matching for the operate. the foremost ordinarily used instrumentation electronic equipment circuit is shown within the figure four. The gain of the circuit is [7]. $V_{out} / V_2 - V_1 = (1 + 2R_2/R_1) R_4/R_3$ (1) The right electronic equipment, at the side of the resistors labeled R3 and R4 is simply the quality differential electronic equipment circuit, with gain = R_4 / R_3 and differential input resistance = $2 \cdot R_3$. the 2 amplifiers on the left area unit the buffers. With R1 removed (open circuited), they're easy unity gain buffers; the circuit can add that state, with gain merely adequate to R_4 / R_3 and high input electrical resistance attributable to the buffers. The buffer gain may be inflated by putt resistors between the buffer inverting inputs and ground to shunt away a

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Flow chart:



CONCLUSION

This paper presents the implementation of associate electrocardiogram observance and vital sign activity System involving low value electronic equipment, filter parts let alone a classy microcontroller and digital display screen mistreatment the on the market resources in our faculty. This project was with success enforced and therefore the output displayed was associate electrocardiogram undulation on the oscilloscope and vital sign is counted by microcontroller for one minute and displayed on digital display.

Future scope:

The project is any developed in future by adding knowledgeable system options like speed variations with moving screen, actual pulse with analysis, displaying twelve lead graphs, and observance graphical record wave type on computer monitor. we are able to enhance the feature of the project by enabling the transmission of graphical record signals through mobiles, signal transmitters or web.

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