

# SMART PHONES DETECTS HEART ATTACK

R.NITHYA

DEPARTMENT OF COMPUTER SCIENCE,  
SAVEETHA SCHOOL OF ENGINEERING,  
CHENNAI

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**Abstract:** Heart attack is a global leading cause of death for both gender and the occurrence is not always known to us. Usually Heart Rate Calculation has traditionally been conducted using specialized hardware or device. It used most commonly in the form of pulse dosimeters or Electrocardiogram devices. Though these devices have higher method and they are reliable to normal user. However, these devices require users to perform their process. In this paper, we propose a system capable of estimating the heart beat rate using just a camera from a commercially available smart phone and also using a mobile stethoscope to record heart sound for detecting the occurrence of heart attack and also some other heart related disease. Fuzzy Logic is used here, which is a part of Data Mining, the expert problem solution for human illness. In general, case people could not understand whenever they face this problem and this is the main cause of death. Our research is about to determine this problem earlier to reduce the death rate of heart attack. The advantage of this method is that the user does not need specialized hardware and he/she can take a measurement in virtually any place under almost any circumstances. In addition, the measurement can be used as a tool for health coaching applications or effective tableware services aimed in enhancing the user's well being

**Keywords:** Data mining; fuzzy logic; smart phone; pulse detection; heart sound detection.

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## 1. INTRODUCTION

Heart attack is also known as myocardial infarction occur when there is a reduced or blockage of blood flow to coronary artery for a period of time leading to myocardial ischemia which, if left untreated can lead to necrosis (tissue death). This resulted in the occurrence of heart attack. The average annual mortality rate for congestive heart failure is 10% per year with a 50% five-year survival rate (CCS, 2010). Our project is to monitor blood pressure and heart beat. Determine the risk and hospitalize victim immediately. In the recent year, technologies have been used for health care. This technologies are based on various types of devices, such as, embedded environment, personal device like cell phones, tablets etc. Health professionals or patients to provide health care to people [3] use these devices. The main cause of death in the world is Cardio-vascular Disease (CVD), representing 30% of all global deaths. Worldwide about 17.5 million people die of Heart Attacks or Strokes each year, according to the World Health Organization (WHO) [2]. After a sudden death of any person from heart attack, it is often heard that the family members could not understand that the pain was of heart attack. Most of the people consider the pain of heart attack as a pain from some other physical problem or disease like gastric. If we can know what is the exactly pain of, then we can minimize the casualties. Our Heart condition can be measured by heartbeat. In our heart, there are four types of heart sound and first two heart sound is audio able and last two is not audio able. The most audio able heart sound is "Lob" from Apex of the heart. We can hear this sound just below medially from the left nipple and the cause of this sound is closure of the mitral and tricuspid valve at the onset of Ventricular Systole. We hear the second heart sound from left Sternly Adage and the cause is closure of aortic and pulmonary valve at the onset of Ventricular Systole. The name of this heart sound is "Dub". The third and fourth heart sound is not audio able. If there is abnormal situation in our heart, it sounds like "Murmur". It causes for abnormal blood flow to valve or normal blood flow to abnormal valve [5]. In the recent years, medical technology has developed rapidly

by using computer science components. Scientist has developed various algorithms, programs and devices to detect heart attack of patients early. Most of them have used conventional medical equipments to produce their result and detect heart attack accurately. We are trying to develop a method that will optimized to use less conventional equipments as much as possible but also maintain the accuracy of detection. We are trying to avoid conventional methods as they are time consuming but we are trying to detect the heart attack pain as soon as possible so that the patient can have enough time to react. We are also trying to use fuzzy logic here; this is one of the parts of Data Mining. It is an expert problem solving system, which can diagnose the human illness [1]. There are some most basic functions called Vital signs that can be measured from a person, which indicates their physical condition. It can measure the normality and abnormality by physical status. Through vital signs, most of the medical condition can be diagnosed and confirmed with the help of some special test of these signs. Each vital sign is measured differently with the use of specialized equipments. There are four vital signs, which are standard in most medical settings:

- Pulse rate
- Respiratory rate
- Blood pressure
- Temperature

In medical science, "Pulse" defined as the rhythmic expansion and contraction of the arteries corresponding to each beat of heart [18]. Therefore, pulse rate is the measurement of human heartbeats. Pulse rate can be measured either in the wrist or neck given by beats/min. The most prominent spots for measuring the pulses are wrist (Radial artery), neck (Carotid artery), inside of the elbow (Brachial artery), behind the knee (Popliteal artery) and ankle joint (Posterior tibia artery) [18]. Pulse rate is very helpful to determine the problems of human body but it is not used to diagnosis the problem. This rate is varies with ages and depends on physical and psychological effect on the body. If the rate of pulse is higher, it indicates the availability of abnormality in the body. It can also be caused by other reasons, e.g. anxiety, anger, excitement, emotion, asthma, heart disorder and so on. Another vital sign is Respiratory Rate, which a person takes the number of breaths within a certain amount of time or more. It also defined as the number of chest movements involving inspiration and expiration per unit time [5]. Usually it measured by counting the number of times the chest rise for a minute. Respiratory rate will increase if the demand of oxygen, due to illness, intensive physical activity is increased. The average respiratory rate for a healthy adult at rest is 12/60 Hz and it varies between 12-20 breaths/min [5]. For the babies, young adults the rate is higher than adults rate.

## 2. PROPOSED METHODOLOGY

In our paper, we are attempting to recognize heart attack by keen telephone. The component of our examination is, spot forefinger on versatile Polaroid, which is demonstrated with a picture underneath. Holding pointer on Polaroid lens At that point it will discover the crest of blood, which will make set utilizing fluctuation estimation, and afterward it will pick a greatest set from the crest. Will demonstrate the framework procedure of the approach. The principle thought of the proposed framework is to figure out normal separation between adjoining crests for heart rate computation. The framework holds the followings steps, A. Framework prepare 1 1. From the beginning Signal separation, here it will catch the edge through the encompassing light level can change throughout catching the edges by utilizing cell phone. It incites the indicator pattern to ascend or tumble down the rate of pulse. After the separation the indicator's normal, gotten near zero truth be told of the encompassing light level variability. 2. After that making of the sets that hold n most astounding crests of the sign. The estimation of n is considered from 5 to m, where m relies on upon the time estimation 3. With those crests of set Variance Calculation will ascertain each one tops in set are sorted by their me appearance in the indicator. At that point fluctuation of the separations between contiguous tops is computed for each situated of the crests. After that, the set of least change worth is browsed estimation. 4. Picked set of least fluctuation esteem from the past step, the normal estimation of the separations between nearby tops is computed. This worth is considered as the separation between the hearts pulsates. This estimation is Heart Rate Calculation. An alternate calculation for measuring heart condition through pulse sound, B. Framework prepare 2 1. Heart sound recording, here it will record 3-10 heart sound in light of the fact that it will come close with the put away information, which will put away in database. In database, default ordinary heart sound is "hubbub" and strange heart sound is "mumble" will be spared. After 3-10 heart sound, client needs to quit recording. Commotion free environment is vital for this step. 2. Contrasting and database, here recorded sound will

consequently come close with the awhile ago put away database. On the off chance that the recorded information could matched with typical sound then a message will show "Heart is ordinary", else if the recorded information matched with strange sound then message will show "Heart is unusual". 3. Earphone must be required to hear the heart sound and spare it for future utilization. Through those steps, it will likewise discover the parlor issue, pulse issue and so forth. Those steps are not just for heart attack on the grounds that the heart sound is not just for heart attack. It could be for an alternate coronary illness. In this manner, anybody could make essential moves to spare from heart attack with advanced cell

### 3. RESULTS

The proposed methodology provides how to catch heart condition utilizing blood and pulse both. This methodology is correct to distinguish heart condition. Utilizing our methodology of recording heart sound, some heart related ailment could be recognized. Distinguishing heart attack, as well as could be discovering heart blockage, unusual blood and valve dissemination. Emulating picture is demonstrating the consequence of Heart sound recording this is a consequence of sound recording from pulse. It could locate heart condition now. Our proposed methodology will help to discover heart condition by heart sound.

### 4. DISCOURSE/CONCLUSION

A several of heart attack location procedures have been presented as such, yet they are exceptionally costly and drawn out. Since this current age is the period of PDA, we accept and merit that our proposed procedure can arrive at to the doorsteps of individuals of each level in the general public. As we are acquainting option modalities with discover heart attack, on the grounds that restricted may fizzle while the others will give the precise conclusion. By this, we can discover an answer for heart attack recognition. That is the reason our proposed calculation is produced. We concentrated on two separate strategies here and we included it in one calculation. Client needs to pick what alternative he/she needs to request identifying heart attack. We think any level of our general public who have advanced cell, can without much of a stretch take insurance for heart attack. Our Application is proficient and suitable from other non-therapeutic application. There are numerous scientists, who committed their entire life to discover the most recent engineering for therapeutic applications. For example, Snyder et al. [15] indicates his life to discover wellbeing supporting framework for supporting individuals in constant conditions. The main way out of this is executing tableware results that will figure out how to expand the nature of conveyed human services. It will keep up low establishment and low running expense [14]. Old wellbeing administrations conveyance is currently moving to present day innovation bit by bit. Wellbeing administrations conveyance is going to change, yet it is the way of the administration itself that will continuously move from receptive medicine of conditions to preemptive health awareness. Staying away from wellbeing dangers could be more productive than managing patients with constant conditions that could have been dodged [16]. This is the place wellbeing checking and cognitive help comes to offer new potential outcomes, to give the clients data.

### 5. FUTURE WORK

In our proposed exploration, we attempted to propose a complete paper for identifying heart attack utilizing two ways. Nonetheless, we have some arrangement about this exploration. Time of India, a heading daily paper in India distributed that "Analysts in the United States, inside the one decade from now Heart Microeconomic Microchip will be set in vein of human body. The advanced cell will gather information and send the data to us". Scientists are attempting to actualize the necessities of Microchip for employments of the innovation in PDA. We will attempt to utilize this engineering within future. On the off chance that this engineering will created then we can identify heart blockage through this innovation by our task. It will help our general public to distinguish heart attack effectively and additionally heart blockage

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