HEALTH CARE RECORD USING NFC CARD FOR CLASSIFICATION FOR ATRIAL FIBRILLATION

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Abstract— Current extending in masses has incite to in-wrinkle in number of patients specialist's offices .Today most prominent task for the pros in mending focus is to keep up recoup the patients data. The data keeping up is a vital endeavour wherever all through the world. Distinctive strategies or advances are deduced to take care of data. Subsequently understanding the present issue this system is proposed to recoup data at speedier rate in a basic way by using NFC card. The system is displaying sharp prosperity record for patients data (normal,pvc, heart patient,etc.) in light of reports arrange is readied. ECG comes about are showed up on outline. For exactness occurs sporadic timberland estimation is used. Structure in like manner recognizes Atrial fibrillation thus from signs recorded utilizing an unpretentious bed-mounted vibration sensor. Generally structure is locked in to give correct data acknowledgment in like manner keeps up exact patient history. Structure in like manner recuperates data at faster rate at whatever point authority needs patient'sdata,as simply persistent requirements to pass on NFC card. Data can be secured recuperated from cloud server which will be proposed for system.

I. INTRODUCTION

Starting late there is expansion being utilized of PDAs particularly in making nations, they can be utilized for a suitable social security administration [1]. In this work, we have proposed a novel plotting for updating social protection structure with the help of Android based mobile phones with NFC interfaces, smartcard headway on modify safe secure part (SE) for securing limits and secure data, and a Health Secure good position on a Server for security and thriving record affiliation adjacent game-plan of coronary affliction which can be seen by knowing the depiction of heartbeats using Random Forest classifier.
The real duty of this paper is proposal of livelihoods for I) Secure Medical Tags for decreasing therapeutic slip-ups besides, ii) Secure Health card for securing Electronic Health Record (EHR) in setting of Secure NFC Tags, PDA using NFC P2P Mode or Card Emulation Mode. Iii) Datamining for Patients ECG feature game plan. The electrocardiogram (ECG) is a non-unmistakable logical and watching instrument that records the electrical advancement of the heart at the body surface [2] . It provides for an awesome degree redress data about the execution of the heart and cardiovascular framework. Any deviation from the standard in a specific ECG estimation

suggests that conceivable coronary malady then again oddity. Early disclosure of heart sicknesses empowers patients to upgrade the method for their life through more exceptional medications. As requirements be, distinctive researches have been driven endeavouring to independent and demand the ECG hail. A coronary infection can be seen by knowing the social event of heartbeats. Regardless, this is remarkably dull undertaking, since some heart sicknesses show up now and again, furthermore, long ECG estimations are required to get them. The insistence and demand of the ECG beats is a to a staggering degree fundamental errand in the coronary certified unit, where the game-plan of the ECG beats is focal instrument for the finding. ECG offers cardiologists with critical data about the musicality and working of the heart. Thusly, its examination shows a profitable method to manage see and treat curious sorts of cardiovascular infections beginning at starting late, different excludes have been extended for the confirmation and social event of ECG standard. Some of them utilize time and some utilization rehash space for delineation. Examination of incalculable is phenomenally horrid, along these lines modernized examination and strategy can be to an incredible degree supportive. Modernized approach gives interminable manual for entire arrangement electrocardiography [5], which is an average in persistent viewing, both in bedside and in walking settings. Unquestionably, countless utilizing a blend of procedures have been proposed for this errand, empowering the complete of arrhythmic changes and in addition help evaluation, e.g., heart rate fancy or heart rate turbulence examination. Regardless, because of the enormous measure of information and the essential for ask for appear in these conditions, extra necessities create concerning the multifaceted method for strategy figuring's. Thusly, suited techniques are required to empower tip top depiction even in negative conditions. The Proposed System gives a solid, clear and smart strategy for subjective fragments choice and picking the heart beat cases from ECG signals. Altered assessment of Cardiac Vascular Diseases (CVD) [6] for patients has been quite a while examine; the cardio vascular sullying is one of the rule wellsprings of death around the globe. The clarifications behind CVD are a consequence of the varieties in the heart rate or inconsistencies and are depicted by the Electrocardiogram (ECG) throbs or plans [1], [2]. The ECG pennant is a portrayal of the bioelectrical movement of the heart tending to the planned weight and relaxing up of the human heart muscles. To get the pennant, ECG gadgets with moving number of terminals (3

Proceedings of 1st Shri Chhatrapati Shivaji Maharaj QIP Conference on Engineering Innovations
Organized by Shri. Chhatrapati Shivaji Maharaj College of Engineering, Nepti, Ahmednagar
In Association with JournalNX - A Multidisciplinary Peer Reviewed Journal, ISSN No: 2581-4230
21st - 22nd February, 2018

12) can be utilized. The Electrocardiogram (ECG) is a fundamental sign standard for heart profitable examination. This electric pennant is conveyed from human heart to make the cardiovascular cycle, which influences the blood to course.

II. TECHNOLOGY

The structure uses orchestrate cloud propels join using PDA as a media to distinguish NFC (Near Field Communication) card recuperate data. Similarly the system influences its own server to store to recuperate data at whatever point required. The data can be recuperated either using adaptable or machine (Laptop, PC,etc.). NFC is the remote media which is a straightforward media to exchange the data. Wireless that has NFC engaged can work in three modes: I) Reader mode: in which contraption can read and casing to NFC based sit out of apparatus names. ii) Peer to Peer (P2P) mode in which NFC contraptions would accomplice be able to and exchange information with each other iii) Card reflecting mode: in which NFC device can go about as a contactless card. Data is secured using RSA Framework. Data is secured on server. The information managed in the Server structure is especially key. The server ought to dependably be affirmed to run truly and the information are spared to the database at continuous breaks. Power is a huge part and the power supply ought to be persistently overseen. A Uninterrupted Power Supply is persistently prescribed.

III. PROPOSED SYSTEM

Fig. 1. Proposed Architecture

Structure primarily focuses on patients history data recuperation at faster rate using NFC card .The system is exhibiting sagacious prosperity record for ECG data in perspective of reports arrange is readied. Results are showed up on graph. In like way for various sicknesses moreover cleverly record can be kept up. The Datamining Framework as takes after

A.   Pre-Processing

1)   Filter: The Data amassed by the sensor is separated utilizing High Pass and Low Pass Filter. The separated information is additionally given for Pre Process.

B.   Pre-process

The Separated information is systematized utilizing the underneath feature extraction methods

1)   Standard deviation of the NN: The base complex variable to figure is the SDNN that is the square foundation of progress. Since change is deductively relative to add up to oblige of unearthly examination, SDNN mirrors all the cyclic segments responsible for whim in the period of recording. In numerous reviews, SDNN is resolved over a 24 hours' era and thusly fuses both flitting high rehash combination, and furthermore the most irrelevant rehash parts found in a 24-hours traverse, as the period of watching decreases, SDNN gages shorter and shorter cycle lengths. It ought to in like way be seen that the aggregate balance increments with the length of eviscerated recording. In this manner SDNN isn't an all-around depicted statically aggregate as needs be of its reliance on the length of recording period. Thusly, in every way that really matters, it is shameful to consider SDNN measures got from accounts of various lengths. A transient account are utilized as a bit of this work. Number of standard deviation is underneath appeared in condition.

2)

$$s = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \overline{x})^2}\;;$$

Where x1,x2..xn are sample x is mean of sample.

   Standard deviation of complexities between bordering NN intervals: The most frequently used measures got from break contrasts join the standard deviation of differentiations between close-by NN between times. Tally of standard deviation is show in above condition.

3) Root mean square progressive distinction of interims: The most all things considered utilized measures got from between time contrasts join the square base of the mean squared separations of dynamic NN interims. Figuring of root mean square is appear in condition.

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$$x_{rms} = \sqrt{\frac{1}{n}\sum_{i=1}^{n} x_i^2} = \sqrt{\frac{x_1^2 + x_2^2 + \cdots + x_n^2}{n}}$$

4) Degree pNN50: The measure of between time complexities of dynamic NN breaks huger than 50ms (NN50) is discovered. It is utilized for the degree controlled by isolating NN50 by the aggregate number of NN interims (pNN50).

$$v_i = (1/c_j)\sum_{j=1}^{c_j} x_i$$

IV. ALGORITHMS

The course of action of data relies upon patient's contamination, it may be related to heart, common, et cetera. These afflictions are requested using count for precision comes to fruition, thinking about patients prosperity as the most basic component. For correct results for request of disease especially heart we use two estimations, discretionary woods k-infers packing.

A. Random Forest
Prepare strategy is an exceptional machine learning system which has been eager about information mining packs. It is exhaustively perceived that the precision from the social event of two or three feeble classifiers is ordinarily better than anything a solitary classifier given a near measure of prepare data. Optional Forests is a get-together classifier proposed by Breiman. It develops a development of demand trees which will be utilized to amass another case. The thought used to influence a classifier to show is building diverse choice trees, each of which utilizes a subset of attributes unpredictably investigated the entire excellent course of action of properties. In any case, the statutes made by existing social event technique every so often conflict with the models conveyed from another classifier. This may impel to an issue when we need to join all run set into a solitary run set. Consequently, a few works want to develop the exactness of the classifiers.
The Random Forests [2] [5] is a successful want instrument in information mining. It utilizes the Bagging method to pass on a subjectively inspected set of prepare information for each of the trees. This Random Forests procedure besides semi-self-confidently picks part fuses; a flighty subset of a given size is passed on from the space of conceivable part features. The best part is feature deterministically investigated that subset. A pseudocode of unusual woods change is appeared underneath.
on

Create f child nodes of N, 1N,…,f N, where F has f possible values (1F, .., f F)

fori = 1 to f do

Set the contents of Nito Di, where Diis all instances in N that match Fi

Call BuildTree(Ni)
end for

end if

To engineer an experiment, the Random Forests depicts the occasion by fundamentally joining every single one of the outcomes from each of the trees in the forests. The methodology used to join the outcomes can be as crucial as speculating the class got from the most lifted number of trees.

B. K-Meansclustering Algorithm
K-implies is one of the scarcest complex unsupervised learning estimations that arrangement with the prominent get-together issue. The procedure takes after an unmistakable and clear approach to manage gathering a given informational index through a specific number of gatherings (expect k packs) settled apriori. The rule accepted is to depict k focuses, one for each package. These fixations ought to be set cleverly in like manner of various range causes arranged outcome. In this manner, the better decision is to put them however much as could sensibly be typical far from each other. The going with step is to take each guide having a place toward a given informational index and associate it to the closest focus. Right when no point is pending, the basic walk is done and an early amassing age is finished. By and by we have to re-figure k new centroids as barycenter of the bunches working out as expected in perspective of the past walk. After we have these k new centroids, another coupling must be done between practically identical informational index focuses and the closest new center intrigue. A circle has been made. As a result of this circle we may see that the k focuses change their district all around asked for until the point when no more changes are done or toward the day's end focuses don't move any more. At last, this estimation goes for restricting and target work known as squared fumble work given by:

$$J(c,\mu) = \sum_{i=1}^{m} ||x^{(i)} - \mu_{c^{(i)}}||^2$$

To convey c classifiers: for I = 1 to c do
Inconsistently test the game plan information Dwith substitution to make Di
Influence a root to focus, Nicontaining I
Call BuildTree(Ni)
end for BuildTree(N):
on the off chance that N contains occasions of just a lone class at that point return
else
Whimsically select x percent of the conceivable part consolidates into
N

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21st - 22nd February, 2018

Select the fragment F with the most vital data get the opportunity to part

Where, xi vj is the Euclidean segment among xi and vj. ci is the measure of server farms in ith package.

c is the measure of social event center interests. Algorithmic strides for k-construes gathering

Let X = f x1,x2,x3,..,xn g be the approach of server farms and V = f v1,v2,.,vc g be the strategy of center interests.

1) Haphazardly select c package focuses.

2) Figure the separation between every datum point and package focuses.

3) Select the information demonstrate the social event focus whose parcel from the package focus is the base of all the get-together focuses.

4) Recalculate the new pack focus utilizing:

$$v_i = (1/c_i) \sum_{j=1}^{c_i} x_i$$

Where, c_i addresses the amount of data centres in ith bundle.

5) Recalculate the partition between each data point and new got pack centres.

6)In case no data point was reassigned then stop, by and large repeat from step 3).

V. SECURITY FRAMEWORK REQUIREMENT

Unimaginable social assurance is a fundamental for both made countries, where the cost of remedial associations is high and security and affirmation are basic issues and influencing countries to like India, where there is a mass people to oversee in pro's workplaces and successful human organizations systems are required. A convincing, reliable, sound and secure flourishing stream is central to oversee patients, their prosperity records effectively and for the right care to reach to the patient at the perfect time. Clear confirmation of things for secure restorative methodologies is incredibly essential for a protected work handle. For example, secure identifiers on the blueprints can offer help remedial organizations fit with overseeing right medication to a patient to diminish fumbles. Near to this issue the Patient Health Record affiliation [7] is crucial both for patients and moreover pro's office association.

In influencing countries to like India, there is no assembled relationship of progress records and records are all things considered held by patients in a paper chart OPD (Out Patient Department) card, which is both clumsy to keep near to the paper based reports additionally clashing. Work is 'in the not very far off past being proficient for a secured, electronic patient record relationship as a Health card on a Smartcard in influencing countries to like India [3] and grouped nations [4]. An extensive part of the general supportive associations affiliations issue a Health card on a Smartcard, which holds just the basic information of the patient. Each and every other record are secured on a bound together supportive storing server. In influencing countries to like India, there are challenges like luxurious framework, availability issue for getting to merged supportive records and estimation of the Health card dependably transversely finished diverse offices. With the late sorts of advance in cell phones including secure accreditation amassing, more prominent utmost limit, remote correspondence interfaces and computational power, they can be used as a bit of social assurance for not just gathering critical success parameters, as in the Body Area Networks, also for accommodating associations affiliation. Insurance and security is a central piece of healing associations. We support that the patient should hold all or colossal patient's EHR electronically, on a Health card that is either on an external Smartcard open by a remote or on the phone held by a patient.

A Health card held tight a mobile phone can hold the entire EHR including reports and tests. Permitted bit can be gotten to securely by a demanded medicinal provider by a principal tap of phone. By excellence of as far as possible the records can be abridged and made for a snappier move to be made. Healthcard on a phone can be critical in made countries in addition, where social affirmation cost is high and assurance and security are major. The patient can hold all records and can manage the security stresses of which bit of the records are to be open. The records can on occasion be created up to the central server for stronghold or securing past history. EHR on Health cards held by people can likewise help in giving the right care in an emergency condition when the patient is thoughtless. It can what's more pick zone of the patient if there ought to build up an event of emergency through area advantage on late PDAs. The business procedure for considering using Health card on PDAs can be imperative to a medicinal ace since it can securely observe patients using clear beneficial PDAs in addition get a short success report. A basic tap of NFC drew in remote [7] won't just redesign the work methodology of remedial experts additionally wind up being valuable in emergency and scattered conditions like mass populated retouching centers. Improved work methods will acknowledge speedier and more fit patient-star affiliation.

The lead obligation of this paper is proposal of a solid secure social protection configuration using Android based PDA with Near Field Communication (NFC) and Bluetooth interfaces and smartcard progress on Secure Element (SE) for holding security accreditations and EHR. NFC is starting at now being used for applications related to fiscal parts and ticketing. We propose a novel utilization of NFC associated with PDAs to discover the chance to secure outside strong engravings for seeing restorative articles like arrangements and patient Health cards. The Health card could be on an outside tag or held tight the patient remote using NFC P2P or card duplicating modes. This can give more essential control of giving individual records to any affirmed master by a principal tap of phones. Bluetooth can be used close-by NFC to give speedier access of unwieldy data from phone. There is a strong

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21st - 22nd February, 2018

cryptographic framework required for government managed savings data. The telephones and Health cards can be asserted by a Health Secure association on an Amazon cloud, to offer associations to updated security and made storing for success records. We additionally show a review on the presence of mind of the adjusted disclosure of atrial fibrillation (AF) from heart vibration advancements as a piece of the EHR. The proposed system is engineered as a screening and checking instrument in home-medicinal association's applications and not as a substitution for ECG-based techniques used as a touch of clinical conditions. In light of the ECG data recorded in an examination with ten AF patients, we evaluate and rank obviously appreciated machine learning checks (coordinate Bayes, reinforce vector machines, self-determined woods) for their execution into one of three classes: sinus mindset, AF, and collectible. For each number, feature subsets of a blueprint of quantifiable time-repeat region and time-space parts were picked in context of the fundamental data among segments and class names and besides the first-and second-arrange facilitated endeavours among segments. The general wander describes NFC Card as Heath Record, Security Framework using Amazon Cloud Service and RSA for securing data over framework and course of action of AF [12].

VI. PERFORMANCE EVALUATION

We will survey execution of different classifiers that we used as a piece of the system. Gathering models generally make two sorts of yields:
1. A diligent number normally as probability. 2. A discrete regard that shows if a guide has a place toward an order (Predicted Class).
In sensible applications we are regularly roused by the discrete regard. The probability regard is basic since it encourages us to appreciate the assurance of model in expected class. Also, there are some businesslike applications for foreseen probability. We first discuss the execution of models in perspective of expected classes (discrete qualities) and after that change into appraisal of execution in light of foreseen probabilities.
A. Evaluating Predicted Classes

Confuse Matrix is a common procedure for portraying the execution of classifiers. It's a direct cross association of foreseen classes vs. focused classes. Underneath table exhibits the confuse structure for a KMeans appear on ECG Dataset. We generally arranged a model on 70percent of tests and attempted the model on remaining 30percent. The confuse framework showed up underneath relies upon desire of model on test data with edge of 50percent:

Confusion Matrix (KMeans)

		Observed	
		True	False
Predicted	True	150	49
	False	19	95

1) Overall Accuracy Kappa Statistic: Disarray Matrix is a run of the mill procedure for delineating the execution of classifiers. It's a direct cross association of foreseen classes vs. focused classes. Underneath table exhibits the confuse structure for a KMeans appear on ECG Dataset. We essentially arranged a model on 70percent of tests and attempted the model on remaining 30percent. The confuse matrix showed up underneath relies upon desire of model on test data with edge of 50percent:
The general precision measure encourages us to understand if exhibit passes the base necessities. The general accuracy ought to be higher than no-information rate for the model to be even considered.

Another choice to no information rate is Kappa Statistic. This estimation shows the general comprehension between two rates. This estimation can have values between - 1 and 1. One shows complete assertion, zero shows complete inconsistency and - 1 exhibits get done with comprehension in backwards bearing. Kappa estimations higher than 0.3 to 0.5 is thought about acceptable (depending on application). Kappa estimation is figured using underneath condition:

$$\kappa = \frac{P_o - P_e}{1 - P_e}$$

where Po is watched qualities and Pe is ordinary regard. Here is the figuring of Kappa bits of knowledge for the perplexity system of ECG dataset presented some time as of late:
There were 150 illustrations that survived and model foreseen that they survive and there was 95 tests that didnt survive and show expected that they dont survive. There were total of 313 examples:
Po = (150 + 95)/313 = 0.783
To register the Pe (Probability of subjective comprehension) we observe that:
Watched esteems show 169 survived and 144 didnt survive. Thusly, the probability of survival is 169/313 = 0.539

Expected qualities show 199 survived and 114 didn't survive. Along these lines, the probability of survival is 199/313 = 0.635
Consequently the probability that both watched and expected qualities exhibit survival is 0.539*0.635 = 0.343 and the probability that both watched and foreseen qualities demonstrate not survival is 0.461*0.365 =0.167 and as needs be probability of comprehension is Pe = 0.343 + 0.167 = 0.51
At last the Kappa Statistic is (0.783 0.51)/(1-0.51) = 0.557

B. Sensitivity Vs. Specificity
Since we examined the general precision of model, we transform into nitty gritty measures that help us better comprehend qualities and shortcomings of classifier. We

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21st - 22nd February, 2018

will for the most part concentrate on Sensitivity and Specificity:

1. Affectability (a.k.a Genuine Positive Rate, TP or Recall): measures the level of positives that are absolutely seen as requirements be (e.g., the rate of wiped out individuals who are enough perceived as having the condition).

2. Specificity (a.k.a True Negative Rate, TN): measures the level of negatives that are exactly seen in like manner (e.g., the rate of solid individuals who are feasibly perceived as not having the condition).

Directly, surrenders back to ECG Dataset test and see how Sensitivity and Specificity enable us to better grasp differentiate ence between models. We showed the perplexity cross section for

aKMeans appear in table 1. Underneath table exhibits the confuse lattice for Random Forest model with edge of 50percent

Observed

		True	False
Predicted	True	104	25
	False	40	144

KMeans Vs. Random Forrest

	KMeans	Random Forest
Overall Accuracy	78.3%	79.2%
Kappa Statistic	55.7%	59.0%
Sensitivity	88.8%	72.2%
Specificity	66.0%	85.2%

As ought to be clear the general precision of those models are close. Regardless, when we look at affectability and specificity, obviously Random Forest model is making a better appearing with respects than of foreseeing the cases which result is false(not survival). Thusly, dependent upon the condition and issue accessible any of those models can be gotten a kick out of the chance to the following.

VII. Result

The framework is mostly runes for producing ECG chart and in underneath figure result is appeared
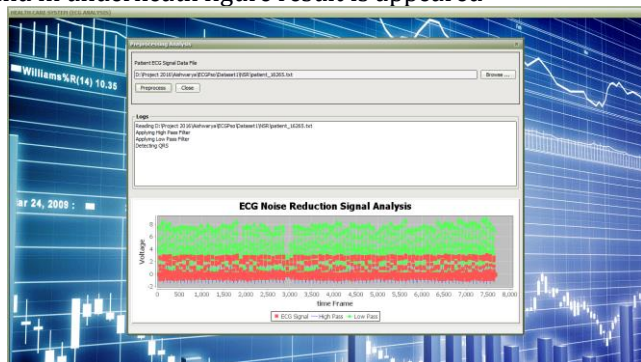
VIII. CONCLUSIONS

In this work, we have proposed applications in setting of NFC associated with Android phones for refreshing helpful associations plan for secure steady inquiry clear assertion and patient Health card on an outside tag. The applications are unquestionably not hard to use with a sensible touch of NFC for secure correspondence. This will upgrade the thriving stream in swarmed recouping groupings of influencing countries to like India and also of made nations. We have furthermore assessed and talked about figuring for the modified affirmation of AF ages from signs recorded utilizing tests dataset download from MIT BH. In light of the results RF classifiers have every one of the reserves of being the most appropriate figuring's for the undertaking of detaching the three classes: normal, arrhythmia, and old anomaly. The proposed setup can be used for applications other than human associations with secure identifiers and secure trade of expansive data among contraptions and portrayal of AF.

IX. REFERENCES

[1] DivyashikhaSethial, DayaGupta ,Huzur Saran NFC Based Secure Mobile Healthcare System 978-1-4799-3635-9/14 2014 IEEE.

[2] C. Bruser, M. D. H. Zink, S. Winter, P. Schauerte, and S. Leonhardt A feasibility study on the automatic detection of atrial fibrillation using an unobtrusive bed-mounted sensor, in Proc. Comput. Cardiol., 2011,vol. 38, pp. 1316.

[3] NafisehKahani Khalid Elgazzar James R. Cordy Authentication and Access Control in e-Health Systems in the Cloud

[4] Lahtela, A., Hassinen, M.and .Iylha, V. RFID and NFC in health-care:Safety of hospitals medication care. IEEE proceedings on Pervasive Computing Technologies for Healthcare, pp. 241-244, 2008.

[5] Juyoung Park, Seunghan Lee, and Kyungtae Kang Arrhythmia Detection using Amplitude Difference Features Based on Random Forest, 978-1-4244-9270-1/15,2015 IEEE.

[6] The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC), Guidelines for the management of atrial fibrillation, Eur. Heart J., vol. 21, pp. 23692429, 2010.

[7] BankarKartik, Joshi Bhargav, Mungal Mahajan, SubhashRathod, Near Field Communication Based Android API Healthcare system

[8] Ana M. Lpez Gloria Fernndez and Francisco Burillo, Mobile computing with Near Field Communication (NFC) smart objects applied to ar-chaeological Research, 2016 12th International Conference on Intelligent Environments978-1-5090-

Proceedings of 1st Shri Chhatrapati Shivaji Maharaj QIP Conference on Engineering Innovations
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In Association with JournalNX - A Multidisciplinary Peer Reviewed Journal, ISSN No: 2581-4230
21st - 22nd February, 2018

4056-8/16 , 2016 IEEE. Dissertation-I Report submitted in partial fullfilment of the requirements.

[9]   NahitEmanet proposed, ECG Beat Classification by Using Discrete Wavelet Transform and Random Forest Algorithm for the classification of ECG beats, 9781-4244-3428-2/2009 IEEE.

[10] FeriFahrianto, Muhammad FadilLubis, Andrew Fiade, Denial-of-Service attack Possibilities on NFC Technology.

[11] Tea Marasovic, VladanPapic Cardiac Arrhythmia Detection Using DCT Based Compressive Sensing and Random Forest Algorithm.

[12] Y. Lim, K. Hong, K. Kim, J. Shin, S. Lee, G. Chung, H. Baek, D. Jeong, and K. Park,, Monitoring physiological signals using nonintrusive sensors installed in daily life equipment, Biomed. Eng. Lett., vol. 1, no. 1, pp. 1120, 2011..

[13] B. H. Jansen, B. H. Larson, and K. Shankar, Monitoring of the ballis-tocardiogram with the static charge sensitive bed,IEEE Trans. Biomed. Eng., vol. 38, no. 8, pp. 748751, Aug. 1991.

[14] G. Brown,, A new perspective for information theoretic feature selec-tion,presented at the 12th Int. Conf. Artif. Intell. Statist., Tampa, FL, 2009.

[15] C. Bruser, M. D. H. Zink, S. Winter, P. Schauerte, and S. Leonhardt, A feasibility study on the automatic detection of atrial fibrillation using an unobtrusive bed-mounted sensor,in Proc. Comput. Cardiol., 2011, vol. 38, pp. 1316.