

## **TUTORIAL 4**

**NAME:**

**ROLL NUMBER:**

**SUBJECT:**

### **LITERATURE SURVEY**

1) The Myocardial infarction MI is also called the heart attack which causes damage to the muscles of heart and also it leads to death. The electrocardiogram and blood test are used for the diagnosis of the acute Myocardial infarction. When increasing the blood enzyme levels several times should be passed. The delay of time lag leads to the diagnosis of disease. The diagnosis of the disease is very important. Hence the diagnosis might be important for detection in ECG for the MI. the deep learning model with CNN algorithm for the end to end structures in the standard 12-lead of ECG signals used for diagnosis of the MI. The CNN model gives accuracy and also sensitivity about 99%. This model have potential for providing the high performance of the detection of MI which is used for various technologies in Ulas Baran Baloglua et al.,[1]

2) The classification of heart condition using ECG and automated diagnosis using advanced methodology have been proposed for the rising death rate from CVD. The ECG from the dataset is integrated with the multi model framework that is refined from the Gradient Descent and used to classify the K-means algorithm. The CNN algorithm is used for detecting the anomalies. This study achieves the accuracy of 98% and specificity, sensitivity show massive improvements. The cardiovascular disease type is detected in Ninni Singh et al.,[2] by using the confusion matrix.

3) The advancement in the field of medicine which increases the demand of prediction of disease also with the system classification. There are various disease classification techniques using machine learning that face severe issues. The (WbGAS) Wolf based Generative Adversarial System is an optimized framework used for finding and also specifying heart disease. The model is trained using WbGAS for predicting the normal and also the abnormal signals. The heart disease type is specified using the trained features. The performance is determined by accuracy, precision, recall, specificity. The outcomes are compared with the existing machine learning approaches in P. Satyanarayana Goud et al.,[3]

4) To develop the interactive classifier with aided deep learning algorithm for assisting the cardiologist with arrhythmia heart disease classification shows threatening conditions which leads to the heart related complications. In this paper Marwa Fradi et al.,[4] the algorithm is used for the classification of patients ECG signals into classes which is based on the ANSI AAMI standard. This is a multistage technique. The stage first combines R-R with the less pass and its filter is applied. The stage second is CNN which is based on connected layers of architecture with various optimizers. The different databases are used for the validation purposes. The accuracy in classification is 99.37% for training , 99.15% for validation and 99.31 for testing set. For MIT-BIH database results 99.5%.

5) Among many chronic disease in all over the world, Cardiovascular disease are the widely spread disease. CVD represent the main cause for mortality and morbidity. In this work

Hossam Magdy Balaha et al.,[5] the detection of heart disease with the voice recordings are given. It contains multiple layers like Feature Extraction layer responsible for the graphical and numerical features, segmentation layer based on segmentation with duration of variables and

also directions, statistics and export layer, optimization and learning layer. The proposed system consists of 11 datasets and 14416 features.

6) This paper Dinesh Kumar Atal et al., [6] states the automatic classification of arrhythmia by usage of the optimization with convolutional neural networks. The Bat-Rider is developed using the Rider Optimization algorithm and multiple objective bat algorithms. At the first gabor and wave features were extracted with the ECG signals. The signals were provided with a BaROA based classifier which identifies the conditions of individuals as Arrhythmia. The methods were analyzed by using the MIT-BIH database and also the analysis of the performance with evaluation parameters like accuracy, sensitivity and specificity which is 93.19%, 93.98% and 95%.

7) In this paper the new computational model which is used on swarm optimization and CNN is used for the five class classification of MITDB dataset. The main goal of PSO is for optimizing the hyper parameter which define CNN layered architecture that increases accuracy and decreases categorical cross entropy Error. This paper found satisfactory layer architecture with 17.68 hours which obtained accuracy of 97% , 98% . The result demonstrates the model Fredy Santander Banos et al.,[7] was reliable and it represents an innovative approach for allowing dispersing and with manual selection in cnn.

8) The deep learning algorithm was used as feature extractors. The CNN algorithm generate a rich features for the different scale. The main aim Xianbin Zhang et al.,[8] is to improve the performance classification of AF and also some short ECG segment. The fused feature is trained and it is tested in SVM. The F1 Score shows method out performance and it is not same for CNN without the feature fusion with an average of F1 score is 84.3%.

9) The main objective is developing new techniques and testing the classifications for improving heart disease detection. Hybrid optimization is used for this research. The data are taken and preprocessed. Then data is subjected to feature fusion so that it is carried by coefficient and overlapping the coefficient which is enabled for deep belief network. This principle can be effectively trained by multiple classifiers which helps to improve the accuracy. The result is combined which helps to produce final result. Moreover the proposed work has a low computation time and hence it improves the efficiency in R. Jayasudha et al.,[9]

10) This work Anila Soman et al.,[10] develop an effective approach which is as a Chameleon Sparrow Search Algorithm that trains the deep CNN by using the ECG signals for classifying the arrhythmia. The features from auto-regressive, DWT, VMD, EMD are extracted. The CsSA is proposed by the integration of the Sparrow Search Algorithm and also the Chameleon Swarm Algorithm. It produces an accuracy of 0.947 and sensitivity of 0.929.

11) CNN has become most commonly used for the medical decision system for predicting and also for diagnosing different diseases. The proposed Ali A. Samir et al.,[11] CNN-jSO is compared to other algorithms and it resulted to be better among them. The CNN-jSO has training accuracy of 97.76% and the testing accuracy of 94.12% .

12) The main aim Ankita Tyagi et al.,[12] is to design a hybrid CNN by use of an GOA which is to divide the different diseases from ECG signals and also the heartbeats. The proposed heartbeat classification model was verified with the database and accuracy is to be 99.58% where accurate classified heartbeat is 86005 and the wrongly classified beats are 0.42 % error rate.

13) This paper M. Karthiga et al.,[13] aid the physician in an early and also the accurate analysis of the heart disease. The work has a proposal of the hybrid Grey Wolf Optimizer and Artificial bee colony algorithms which continue the originality of the human strategy for the maintenance of the exploration capability.

14) Sonam Palden Barfungpa et al.,[14] propose the HD system with deep dense networks for the prediction of heart disease at the earliest stage. Initially this proposed system performs data acquisition. This was in the Python platform and it evaluated the performance in the terms of different performance metrics using the heart disease dataset. The maximum accuracy is 99.57% in the proposed scheme.

15) This paper Md Mamun Ali et al.,[15] aims to identify the classifier with accuracy for the treatment purposes. The features were categorized with the score that helps in finding the huge prediction of heart diseases. This heart disease dataset was gathered based on the decision tree, KNN, random forest which achieved the accuracy of 100%.