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| Date         | 30 September 2022                                                                              |
| Team ID      | PNT2022TMID01033                                                                               |
| Project Name | Classification Of Arrhythmia By Using Deep Learning With 2-D ECG Spectral Image Representation |
| Maximum Mark |                                                                                                |

| S/No | TITLE                                                                                    | AUTHOR                                                                       | YEAR | LINK                                                                                                                                                                                                                                                                                                              | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Classification on Arrhythmia by using deep learning with 2-D ECG spectral representation | Amin Ullah ,<br>Muhammad Anwar,<br>Muhammad Bilal,<br>Raja Majid<br>Mehmood. | 2020 | <a href="https://www.researchgate.net/publication/341623436_Classification_of_Arrhythmia_by_Using_Deep_Learning_with_2-D_ECG_Spectral_Image_Representation">https://www.researchgate.net/publication/341623436_Classification_of_Arrhythmia_by_Using_Deep_Learning_with_2-D_ECG_Spectral_Image_Representation</a> | The electrocardiogram (ECG) is one of the most extensively employed signals used in the diagnosis and prediction of cardiovascular diseases (CVDs). The ECG signals can capture the heart's rhythmic irregularities, commonly known as arrhythmias. A careful study of ECG signals is crucial for precise diagnoses of patients' acute and chronic heart conditions using 2-D CNN(Central Neural Network) |
| 2.   | Classification of ECG arrhythmias using multiresolution analysis and Neural Networks     | G. Krishna Prasad,<br>J.S. Sahambi                                           | 2003 | <a href="https://www.researchgate.net/publication/4059077_Classification_of_ECG_arrhythmias_using_multiresolution_analysis_and_Neural_Networks">https://www.researchgate.net/publication/4059077_Classification_of_ECG_arrhythmias_using_multiresolution_analysis_and_Neural_Networks</a>                         | A method to accurately classify ECG arrhythmias through a combination of wavelets and artificial neural networks (ANN). The ability of the wavelet transform to decompose signal at various resolutions                                                                                                                                                                                                   |

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|    |                                                                                                                           |                                                                                           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | allows accurate extraction/detection of features from non-stationary signals like ECG. A set of discrete wavelet a method to accurately classify ECG arrhythmias through a combination of wavelets and artificial neural networks (ANN). The ability of the wavelet transform to decompose signal at various resolutions allows accurate extraction/detection of features from non-stationary signals like ECG. A set of discrete wavelet |  |
| 3  | Classification of Arrhythmia from ECG Signals using MATLAB [International Journal of Engineering and Management Research] | Priyanka Mayapur                                                                          | 2019        | <a href="https://www.researchgate.net/publication/330185548_Classification_of_Arrhythmia_from_ECG_Signals_using_MATLAB">https://www.researchgate.net/publication/330185548_Classification_of_Arrhythmia_from_ECG_Signals_using_MATLAB</a> International Journal of Engineering and Management Research<br><a href="https://www.researchgate.net/project/ANALYSIS-OF-LEAD-II-ECG-FOR-CLASSIFICATION-AND-DETECTION-OF-HEART-DEFECTS">https://www.researchgate.net/project/ANALYSIS-OF-LEAD-II-ECG-FOR-CLASSIFICATION-AND-DETECTION-OF-HEART-DEFECTS</a> | Automatic classification of ECG has evolved as an emerging tool in medical diagnosis for effective treatments. The work proposed in this paper has been implemented using MATLAB. In this paper, we have proposed an efficient method to classify the ECG into normal and abnormal as well as classify the various abnormalities.                                                                                                         |  |
| 4. | Multiclass Classification of Cardiac Arrhythmia                                                                           | Anam Mustaqeem, <sup>1</sup> <b>Syed Muhammad Anwar</b> , <sup>1</sup> and Muhammad Majid | 05 Mar 2018 | <a href="https://downloads.hindawi.com/journals/cmmm/2018/7310496.pdf">https://downloads.hindawi.com/journals/cmmm/2018/7310496.pdf</a>                                                                                                                                                                                                                                                                                                                                                                                                               | This study is conducted to classify patients into one of the sixteen subclasses, among                                                                                                                                                                                                                                                                                                                                                    |  |

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|    | a Using Improved Feature Selection and SVM Invariants                                                                           |                                                                                                                                                  |             |                                                                                                                                                             | which one class represents absence of disease and the other fifteen classes represent electrocardiogram records of various subtypes of arrhythmias.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5. | Automatic Classification of Cardiac Arrhythmias based on ECG Signals Using Transferred Deep Learning Convolution Neural Network | P. Giriprasad Gaddam <sup>1</sup> , A Sanjeeva reddy <sup>1</sup> and R.V. Sreehari                                                              | 2021        | <a href="https://iopscience.iop.org/article/10.1088/1742-6596/2089/1/012058/pdf">https://iopscience.iop.org/article/10.1088/1742-6596/2089/1/012058/pdf</a> | In the current article, an automatic classification of cardiac arrhythmias is presented using a transfer deep learning approach with the help of electrocardiography (ECG) signal analysis. Now a days, an ECG waveform serves as a powerful tool used for the analysis of cardiac arrhythmias (irregularities). The goal of the present work is to implement an algorithm based on deep learning for classification of different cardiac arrhythmias. Initially, the one dimensional (1-D) ECG signals are transformed to two dimensional (2-D) scalogram images with the help of Continuous Wavelet(CWT). |
| 6. | Computer-Aided Diagnostics of Heart Disease Risk                                                                                | Ebenezer Owusu, <sup>1</sup> Prince Boakye-Sekyerehene, <sup>1</sup> <b>Justice Kwame Appati</b> , <sup>1</sup> and Julius Yaw Ludu <sup>1</sup> | 23 Dec 2021 | <a href="https://downloads.hindawi.com/journals/cin/2021/3152618.pdf">https://downloads.hindawi.com/journals/cin/2021/3152618.pdf</a>                       | This study proposes a boosting Support Vector Machine (SVM) technique as the backbone of computer-aided diagnostic tools for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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|  | Predictio<br>n Using<br>Boosting<br>Support<br>Vector<br>Machine |  |  |  | more accurately forecasting heart disease risk levels. The datasets which contain 13 attributes such as gender, age, blood pressure, and chest pain are taken from the Cleveland clinic. In total, there were 303 records with 6 tuples having missing values. |
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