

## Ideation Phase Literature Survey

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| Date         | 19 September 2022  |
| Team ID      | PNT2022TMID41545   |
| Project Name | CLASSIFICATION OF ARRHYTHMIA BY USING<br>DEEP LEARNING WITH 2-D ECG SPECTRAL<br>IMAGE REPRESENTATION |

| S.No | Title & Author   | Year | Technique | Proposed System   |
|------|--|------|-----------|---|
| 1    | ECG beat Classifier designed by combined neural network model<br><br>I.Guler, E.D.Ubeyil | 2020 | Computing | The use of combined neural network model to guide model selection for classification of ElectroCardioGram(ECG). The ECG signals were decomposed into Time-Frequency representation using discrete wavelet transform and stastic-al features were calculated to depict their distribution.The first level networks were implemented for ECG beats classifiction using the stastical features as inputs.To improve dignostic ccuracy, the second level networks were trained using the outputs of the first level networks as input data. Four types of ECG beats (nor-mal beat ,congestive heart failure beat,atrial fibillation beat) obtained from the Physiobank database were Classified with the Accuracy of 96.94% by the combined neural network.The combined neural network model acheiv-ed accuracy rates which Higher than that of the stand-alone neural network model. |

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|   |  |      |                      | The ECG signals were decomposed into time-frequency representation using to depict their distribution.   |
| 2 | <p>A QRS complex detection algorithm using ElectroCardia Gram leads Comput. Cardiol.</p> <p>J.C.T.B.Moreas, M.M.Freitas, F.N. Vilani,E.V.costa</p> | 2022 | Classifier algorithm | <p>A QRS complex detection algorithm was developed using the available leads of the ElectroCardioGram(ECG). The detector is based on the combination of two improved versions of QRS detectors available in the literature. An important characteristics of this algorithm is the possibility of using two or more ECG channels for QRS detection. The first detection method is based on a cross number in a detection threshold defined by the authors. When a low reliability situation occurs in the first method, the output of the second method also uses an adaptive detection threshold defined by the authors and a candidate QRS is tested again -st some criteria that use features as amplitude, width and RR interval to validate the candidates resulted in 99.73% sensitivity.</p> |
| 3 | Application of Artificial neural networks for ECG signals detection and classification   | 2021 | AI Approach          | The application of Artificial neural networks for Electro CardiaGraphic QRS detection and beat classification. For the task of QRS detection, the authors used an adaptive multilayer perceptron structure to model the nonlinear back   |

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|  | Y.H.Hu,W.J.Tompkin,<br>J.L.Urrusti, V.X.<br>Afonso, J.Electro<br>cardiol. |  |  | ground noise so as enhance<br>the QRS complex.(Massach<br>usetts Institute of Technology<br>Beth Isrel Hospital,Cambridge,<br>MA) arrhythmia database are<br>encouraging |
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**Reference:**

[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)