|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No** | **Name of IEEE Paper** | **Limitation** | **Overall Summary** | **One-Line Explanation** |
| 1. | Beyond Heart Murmur Detection: Automatic Murmur Grading From Phonocardiogram | The proposed algorithm does not incorporate a segmentation step, which is commonly used in phonocardiogram (PCG) analysis to identify different heart sound components (S1, S2, systole, and diastole). This omission may impact the model’s ability to precisely locate murmurs, especially in noisy environments | This study presents an automated algorithm for murmur grading using phonocardiogram (PCG) recordings. It employs deep learning techniques, specifically convolutional residual neural networks with channel-wise attention, to classify heart murmurs as absent, soft, or loud, aiding in early detection of cardiac conditions | A deep learning-based approach for automatic grading of heart murmurs using phonocardiogram recordings​ |
| 2. | Heart Murmur Severity Stages Classification Using Multikernel Residual CNN | The proposed model does not explicitly address the presence of background noise in low-quality PCG recordings, which can affect classification accuracy. | This study introduces a Multikernel Residual Convolutional Neural Network (MK-RCNN) for classifying heart murmur severity stages using phonocardiogram (PCG) signals. The model captures multiscale features and employs residual learning for improved accuracy, achieving state-of-the-art performance across multiple datasets. | A deep learning-based approach for automated classification of heart murmur severity stages using PCG signals. |
| 3. | Precision Diagnosis: An Automated Method for Detecting Congenital Heart Diseases in Children From Phonocardiogram Signals Employing Deep Neural Network | The study is limited to binary classification (normal vs. abnormal) and does not address multi-class classification of different congenital heart disease types​ | The paper presents an automated method for detecting congenital heart diseases in children using deep neural networks on phonocardiogram (PCG) signals, emphasizing data preprocessing, feature extraction, and classification techniques​ | The study develops a deep-learning-based approach to detect congenital heart diseases from heart sound recordings. |
| 4. | Classification of Phonocardiogram Signals Using the Wavelet Scattering Transform and Equilibrium Optimization Approach | The classification accuracy depends heavily on the choice of the quality factor in wavelet scattering, making optimization critical. | The paper proposes a phonocardiogram (PCG) signal classification method using the Wavelet Scattering Transform and Equilibrium Optimization, achieving high accuracy. | A machine learning-based PCG classification method using wavelet scattering and optimization for improved heart sound analysis. |
| 5. | Identification of Congenital Valvular Murmurs in Young Patients Using Deep Learning-Based Attention Transformers and Phonocardiograms | The model's generalization capability is limited due to variations in the training dataset and the need for multi-center validation​ | The paper proposes a deep learning-based attention transformer model for identifying congenital valvular murmurs in young patients using phonocardiograms, aiming to provide an automated and cost-effective diagnostic tool​ | A deep learning-based approach is introduced to detect congenital valvular murmurs in young patients using PCG recordings. |
| 6. | An RNN-Bi LSTM Based Multi Decision GAN Approach for the Recognition of Cardiovascular Disease (CVD) From Heart Beat Sound: A Feature Optimization Process | The model's effectiveness is constrained by the quality of phonocardiogram (PCG) signals, as noise and artifacts can affect accuracy​ | The paper presents an RNN-BiLSTM-based Multi-Decision GAN approach for cardiovascular disease (CVD) recognition using heartbeat sounds. It integrates deep learning and feature optimization techniques to improve classification performance​ | A deep learning-based approach utilizing RNN-BiLSTM and GANs for automated CVD detection from heartbeat sound signals​ |
| 7. | Automated Detection of Heart Valve Diseases Using Stationary Wavelet Transform and Attention-Based Hierarchical LSTM Network | The model's performance may degrade in the presence of high background noise, requiring further noise-robust optimization. | The paper proposes an automated method for detecting heart valve diseases (HVDs) using Stationary Wavelet Transform (SWT) and an attention-based Hierarchical LSTM (HLSTM) network, achieving high classification accuracy across multiple datasets. | A deep learning-based approach using SWT and attention-based HLSTM for automated detection of heart valve diseases. |
| 8. | Automated Heart Sound Activity Detection From PCG Signal Using Time–Frequency-Domain Deep Neural Network | The model requires further validation with larger, more diverse datasets to ensure robustness across different populations. | The paper presents an automated method for detecting heart sound activities from phonocardiogram (PCG) signals using a time-frequency deep neural network (DNN). The proposed model achieves high accuracy and outperforms traditional classifiers like SVM and KNN. | A deep learning-based approach for detecting heart sound activity from PCG signals using time–frequency domain analysis​ |