**Model Development Phase Template**

|  |  |
| --- | --- |
| Date | 20/6/2025 |
| Project Title | **Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation**. |
| Maximum Marks | 5 Marks |

**Feature Selection Report**

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.



| **Feature** | **Description** | **Selected (Yes/No)** | **Reasoning** |
| --- | --- | --- | --- |
| Filepath/Filename | Path or name of the ECG spectral image file | No | Not needed as a model input; used only for data loading and tracking. |
| Image (Pixel Data) | The actual pixel data of the 2D ECG spectral image | Yes | Core input for deep learning models (CNNs extract features directly from image data). |
| Label (Arrhythmia Class) | The target class (e.g., Normal, LBBB, RBBB, PAC, PVC, VFib) | Yes | Essential as the supervised learning target for classification. |
| Image Height/Width | Dimensions of the image | No | All images are resized to a fixed size during preprocessing; not needed as a separate feature. |
| Color Channels | Number of color channels (e.g., RGB or grayscale) | No | Handled in preprocessing/model input shape; not a model feature. |
| Acquisition Date/Time | Date/time when ECG was recorded | No | Not relevant for classification; does not affect ECG morphology. |
| Patient ID | Unique identifier for each patient | No | Not used for classification; could introduce data leakage if included. |
| Device/Source | Device or source from which ECG was recorded | No | Not used; model is designed to generalize across devices. |
| Signal-derived Features (e.g., RR interval, QRS duration) | Features calculated from raw ECG signal (if available) | No | Not used in image-based deep learning; if using raw signals, could be included in a hybrid approach. |
| Augmented Image Indicator | Whether the image is original or augmented | No | Not needed; augmentation is for training diversity, not as an input feature |