**ABSTRACT**

The low and high arrhythmic risk of myocardial infarction is classified based on size, location, and textural information of scarred myocardium. These features are extracted from late gadolinium (LG) enhanced cardiac magnetic resonance images (MRI) of post-MI patients. The risk level caused by features are evaluated by using various classifiers including knearest neighbor (k-NN), support vector machine (SVM), decision tree, and random forest classifier. Here, high risk patients are separated from low risk patients based on the decision made by Left Ventricular Ejection Fraction (LVEF) and biomarkers based on scar characteristics. However, additional image processing techniques are needed to have clear visibility for differentiating scar texture between two risk groups. In order to maintain balanced risk groups, synthetic minority over-sampling technique (SMOTE) is used in existing system. But accuracy is limited further because of imbalance risk groups and manual segmentation of classifier. So to improve accuracy, proposed method uses automatic segmentation and Local Phase Quantization (LPQ)