**Abstract**

Mammogram is an x-ray examination of breast. It is used to detect and diagnose breast disease in women who either have breast problems such as a lump, pain or nipple discharge as well as for women who have no breast complaints. Digitized mammographic image is analysed for masses, calcifications, or areas of abnormal density that may indicate the presence of cancer. Automated systems to analyse and classify the mammogram images as benign or malignant will drive the medical experts to take timely clinical decision. In this work, the mammogram classification task carried out using powerful supervised classification techniques namely Extreme Learning Machine with kernels like linear, polynomial, radial basis function and Genetic Programming. The various task involved in this work are image preprocessing, feature extraction, building models through training and testing the classifier. The two types of mammogram image, Benign and Malignant are considered in this work and 50 images for each type collected from Mini MIAS database. Selection of Region of Interest (ROI) from the original image and Adaptive Histogram Enhancement are applied on the mammogram image before extracting the intensity histogram and gray level co-occurrence matrix features. In the dataset, for training 80% of the data are used and for testing 20% of data are used. Models are built using Extreme Learning Machine and Genetic Programming. The performances of the models are tested with test dataset and the results are compared. The predictive accuracy and training time of the classifier Genetic Programming is substantially better than the classifier built using Extreme Learning Machine with kernels linear, polynomial and radial basis function.