**Abstract**

Breast cancer is one of the most leading causes of death among women. The early detection of abnormalities in breast enables the radiologist in diagnosing the breast cancer easily. Efficient tools in diagnosing the cancerous breast will help the medical experts in accurate diagnosis and timely treatment to the patients. In this work, experiments carried out using Wisconsin Diagnosis Breast Cancer database to classify the breast cancer either benign or malignant. Supervised learning algorithm Support Vector Machine (SVM) with kernels like Linear, Polynomial and Radial Basis Function and evolutionary algorithm Genetic Programming are used to train the models. The performance of the models are analysed where genetic programming approach provides more accuracy compared to Support Vector Machine in the classification of breast cancer and seems to be an fast and efficient method.