

### **310. A COMPARATIVE STUDY OF GENETIC ALGORITHM AND PARTICLE SWARM OPTIMIZATION IN THE DETECTION AND CLASSIFICATION OF MASSES IN MAMMOGRAMS**

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Breast cancer is the leading cause of cancer death among women. Screening mammography is the only method currently available for the reliable detection of early and potentially curable breast cancer. Research indicates that the mortality rate could decrease by 30% if women age 40 and older have regular mammograms. The detection rate can be increased 5-15% by providing the radiologist with results from a computer-aided diagnosis (CAD) system acting as a “second opinion”. This paper compares the classification accuracy of Genetic Algorithm and the Particle Swarm Optimization, in the detection and classification of masses in Mammograms. The data set used consisted of ROIs from the mammogram images in the MIAS Mini-Mammographic database. The Local Binary Pattern (LBP) of each ROI is then found. LBP is an illumination invariant texture feature that is computed separately for every image pixel. Twenty-two texture features were derived using gray level co-occurrence matrix (GLCM) method from LBP of each ROI. After extraction of features, GA and PSO algorithms are used to search for the feature subset, and K-nearest neighbor (KNN) classifier is used to evaluate the feature subset.

Keywords— mammography, mass classification, particle swarm optimization, feature selection, GA, PSO, KNN classifier, GLCM, LBP