

## Computer Aided Diagnosis of Mammographic Microcalcification Clusters

**R**esearchers at the University of South Florida have developed a novel computer aided detection and diagnosis algorithm for mammographic calcification clusters.

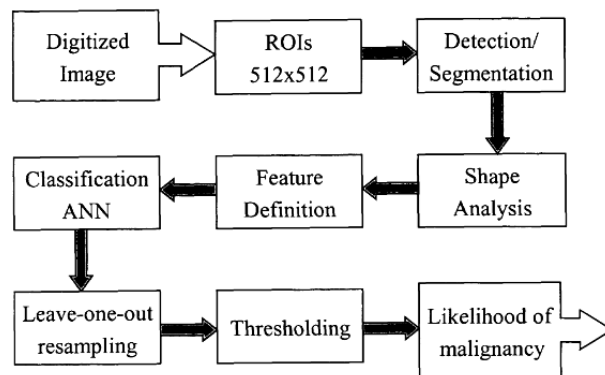
A mammogram is an x-ray screening tool used to identify breast tissue abnormalities such as cysts, calcifications, and tumors. Research shows that annual mammography screenings and physical breast exams can drastically reduce the mortality rate associated with breast cancer. Calcium deposits that form in the breast are one of the most important characteristics in the identification of cancer by a mammogram screening. However, after laboratory analysis, many of the calcium deposits are determined to be benign. Great uncertainty in the type of the detected calcifications leads to many unnecessary biopsies. This highlights the need for an accurate method of differentiating between benign and cancerous micro-calcifications.

USF researchers have developed a computer-based system that improves diagnostic accuracy by more than fourfold when compared to current methods. The program utilizes image processing and pattern recognition techniques to classify micro-calcifications as benign or malignant. These techniques include automatic detection, segmentation of breast calcifications, analysis of the shape and distribution of the calcifications, and analysis of additional personal risk factors. The methodology is applicable to both film and digital mammography and yields high classification accuracy.

### ADVANTAGES:

- Increased diagnostic accuracy
- Substantial reduction in health care cost
- Differentiates between benign and cancerous micro-calcifications
- Simple and rapid diagnostics

### Computer Aided Diagnosis Techniques for Medical Imaging



### A Flowchart of the Algorithm Developed to Differentiate Between Benign and Malignant Micro-Calcification Clusters