

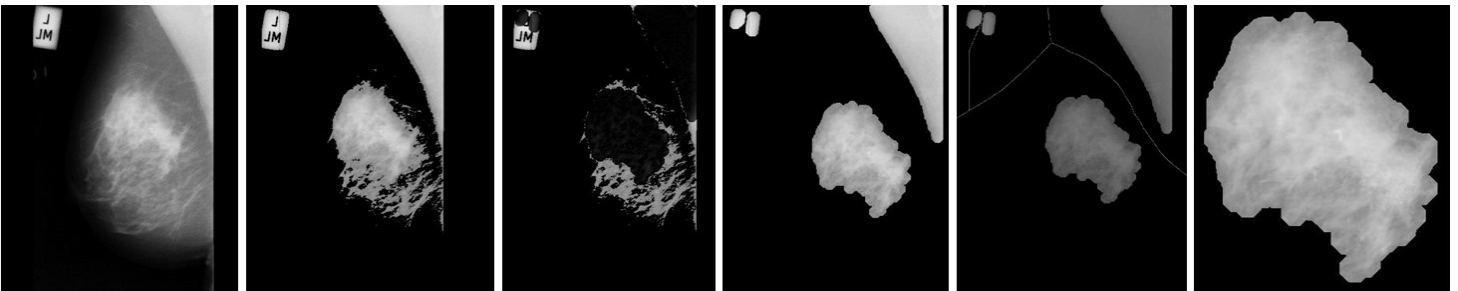
# System for Early Detection of Breast Cancer

OU ID: #16013

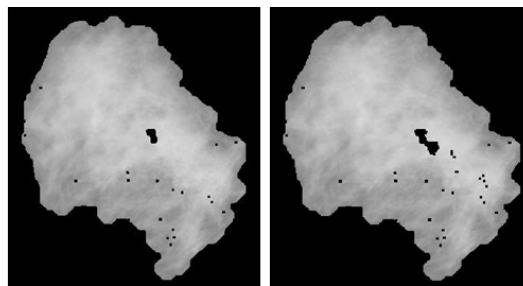
## Overview

Breast cancer is the second leading cause of cancer death in women. Early detection and effective treatment are key to decreasing the risk of death. The American Cancer Society recommends regular mammograms to find cancer early and minimize the likelihood that aggressive treatment and chemotherapy will be needed, and to increase the chances of being cured. However, it may be difficult for mammograms to identify smaller microcalcifications in breast tissue.

Ohio University faculty member Dr. Mehmet Celenk has developed an automated computer detection system that can identify microcalcification of breast tissue in digital images from mammograms to allow for earlier diagnosis of breast cancer, which can lead to early treatment and improved outcomes.



Original mammogram image with calcification (1) is then segmented (2) and transformed (3-5). Region of interest (6) is then enhanced.



Thresholding is performed to identify microcalcifications. This method provides a high detection rate and a low false negative rate.

## Benefits

- Diagnosis of breast cancer at its earliest stages by detecting small microcalcifications
- Overall detection rate of 94.4%, sensitivity of 93.7%, accuracy of 88.2% and false negative rate of 5.6%
- Computer system can be embedded into existing image processing software



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## Commercial Application

This technology is designed to better detect small microcalcifications in breast tissue, providing a mechanism for even earlier detection of disease. This translates into earlier treatment and the potential for better outcomes.

## Inventors

Mehmet Celenk, Ph.D., Professor, Electrical Engineering and Computer Science. Dr. Celenk received a Ph.D. from Stevens Institute of Technology in EECS and joined Ohio University in 1985.

Akshay Bharadwaj, Graduate Student. Akshay is currently pursuing a Masters Degree in Electrical and Electronics Engineering, with research interest in computer vision and navigation of ground and aerial robots.

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