



P#2

Mass classification in X-Ray breast imaging



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Project plan

Dataset: MIAS (Mammographic Image Analysis Society)

Pre processing

Mass segmentation

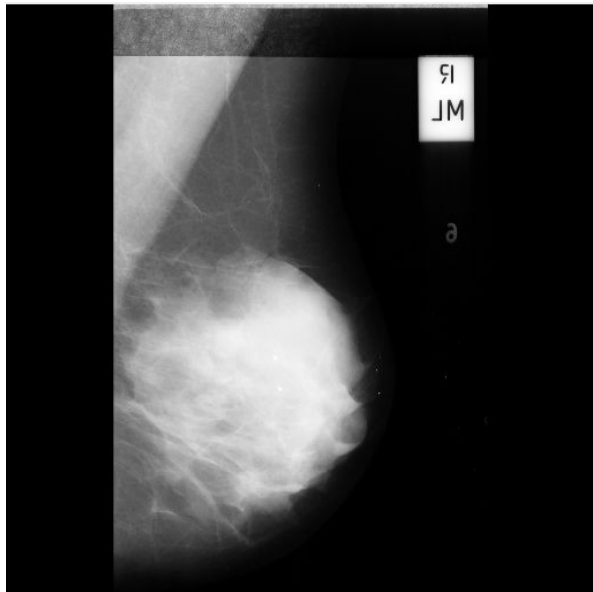
Feature extraction

Classify Breast Mass: Benign / Malignant using Neural network classification and Neural network Pattern Recognition

Pre processing

- We flipped the even images to keep them all facing the same direction;
- We cropped them to only keep relevant portion;
- We removed the artifacts and noise;

Output of preprocessing



mdb002.pgm

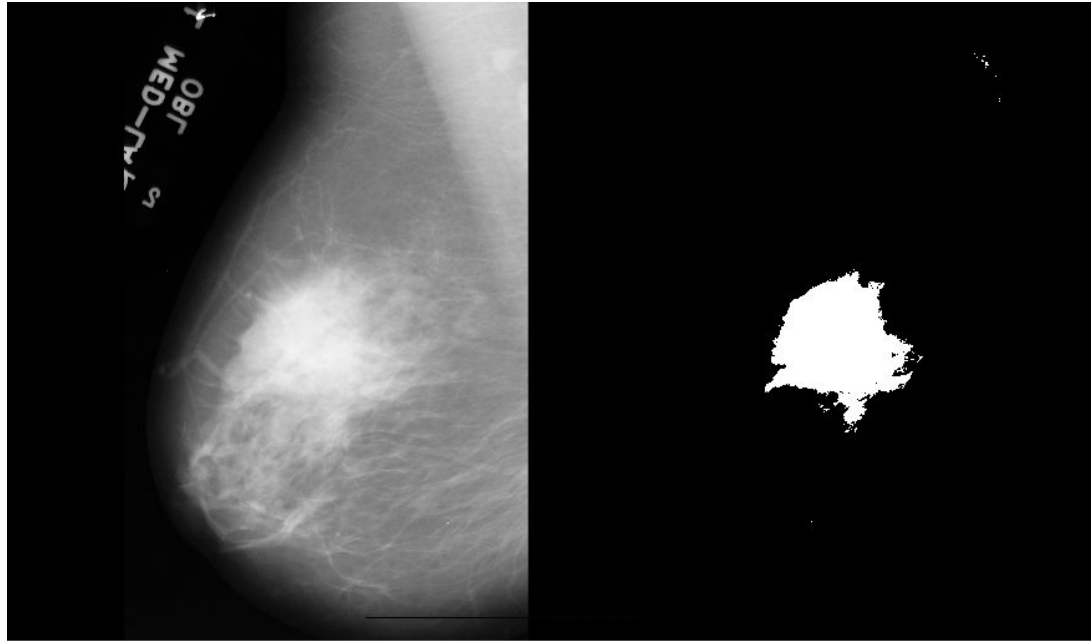


mdb002.pgm_processed

Mass Segmentation

We used 2 thresholds to remove the highest and lowest intensity pixels to remove the pixels that are not from the breast and also to remove breast pixels that have no mass.

Output of segmentation



Feature Selection

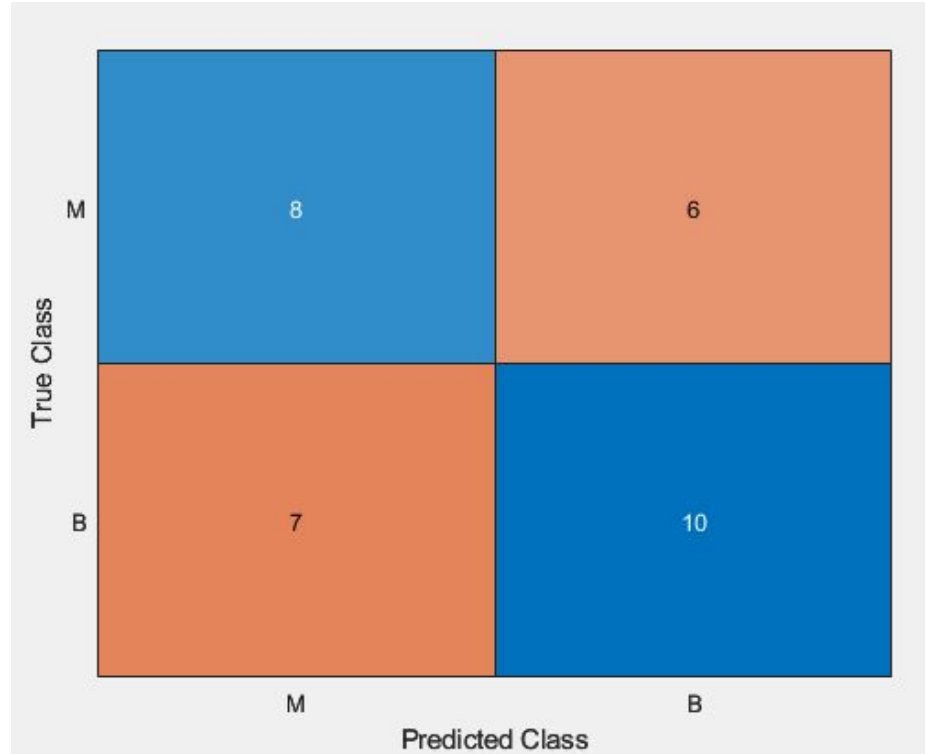
Features used with regionprops:

- Max Area;
- Max Perimeter;
- Max diameters;
- Mean Centroid;
- Average Area;
- Average Perimeter;

Fitcnet - Train neural network classification mode

Fitcnet - Train a feedforward, fully connected neural network for classification

Accuracy = ~ 60%



Neural network pattern recognition

Process of finding
regularities and similarities
in data using machine
learning data.

