Diagnosis of Abnormalities in 3-Dimensional Mammograms via an Artificial Neural Network

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Mammograms are the most popular method of early detection for breast cancer, the 3rd leading cause of death among women in the United States. In the United States, about 37 million mammographic images are performed every year, which makes mammography a $2 billion per year industry. Despite the popularity of mammograms, radiologists diagnose 20% of all mammograms as false negatives. This creates the clear need for a robust system to both detect abnormalities (potential tumors) in mammograms and diagnose these abnormalities. In this investigation, I developed an algorithm which determines, in 3 dimensions, what pixels in a mammographic image constitute an abnormality. The abnormality that my algorithm isolates is then analyzed, and the abnormality is classified as either benign or malignant via a back-propagation neural network. This approach, which can be deployed as a web based service, resulted in 94% of mammograms being correctly diagnosed.

Awards Won:

Third Award of $1,000