

# Study of the effect of breast tissue density on detection of masses in mammograms (2013)

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Autores: Antonio García-Manso, Carlos J. García-Orellana, Horacio M. González-Velasco, Ramón Gallardo-Caballero and Miguel Macías

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2013 DOI: <http://dx.doi.org/10.1155/2013/213794> ISSN: 1748-670X Abstract: One of the parameters that are usually stored for mammograms is the BI-RADS density, which gives an idea of the breast tissue composition. In this work, we study the effect of BI-RADS density in our ongoing project for developing an image-based CAD system to detect masses in mammograms. This system consists of two stages. First a blind feature extraction is performed for regions of interest (ROIs), using Independent Component Analysis (ICA). Next, in the second stage, those features form the input vectors to a classifier, neural network or SVM classifier. To train and test our system, the Digital Database for Screening Mammography (DDSM) was used. The results obtained show that the maximum variation in the performance of our system considering only prototypes obtained from mammograms with a concrete value of density (both for training and test) is about 7%, yielding the best values for density equal to 1, and the worst for density equal to 4, for both classifiers. Finally, with the overall results (i.e., using prototypes from mammograms with all the possible values of densities), we obtained a difference in performance that is only 2% lower than the maximum, also for both classifiers.

Keywords: Independent Component Analysis (ICA), breast cancer, DDSM, CAD, mass, breast tissue composition.