

# Breast Cancer Classification of Mammograms using Machine Learning

R. Guzmán-Cabrera<sup>1</sup>, J. R. Guzman-Sepulveda<sup>2</sup>, T. Cordova-Fraga<sup>3</sup> and M. Torres-Cisneros<sup>1</sup>

<sup>1</sup> Universidad de Guanajuato, División de Ingenierías, Campus Irapuato-Salamanca, Carretera Salamanca-Valle de Santiago Km. 3.5+1.8 comunidad de Palo Blanco, C.P. 36885, Salamanca, Gto. México

<sup>2</sup> Departamento de Electrónica, UAM Reynosa-Rodhe, Universidad Autónoma de Tamaulipas, Carr. Reynosa-San Fernando S/N, Reynosa, Tamaulipas 88779, México.

<sup>3</sup> Division de Ingenierías, Campus Leon,

Author e-mail address: [guzmanc@ugto.mx](mailto:guzmanc@ugto.mx)

In this work, we propose a CADx approach to computationally perform mammogram classification. This work is only focused on the classification system and the obtained results show that the proposed classifier consolidates a reliable stage to provide valuable information either for masses or micro-calcification detection after segmentation and extraction take place. Fig. 1 shows the experimental results for three sample cases previously hand-labeled. The classifier system exhibits effective performance but it has been tested only on a few images, more accurate and intensive training, and wider range of images are still in progress.

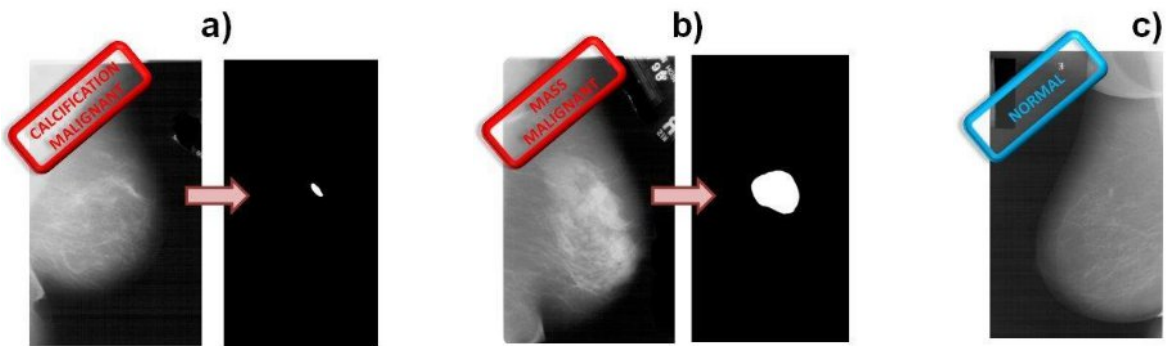


Figure 1. Experimental results of the proposed classifier for mammograms with a) malignant micro-calcification, b) malignant mass, and c) normal conditions.

A combined classifier for the discrimination between malignant, either masses and micro-calcifications, and benignant mammograms has been demonstrated. The combined classifier is formed by two learning methods: SVM (Support Vector Machines) and Naïve Bayes machine learning. The learners building the combined structure naturally complement each other due to the difference between their principles of operation thus resulting in the increase of the overall accuracy. The proposed combined classifier allows reliable image classification and it was demonstrated to be a valuable tool for mammogram diagnostics. The proposed classifier was tested only on a few previously hand-labeled sample images system resulting in good agreement with the prior assigned classifications. Despite the classifier system exhibits effective performance, more accurate and intensive training, and wider range of images are still required so the classifier is still in progress.

## References

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The University of Guanajuato certifies the participation of

**Miguel Torres Cisneros, Ph.D.**

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PhD Teodoro Córdova Fraga