

## **FACULTAD DE INGENIERÍA**

Carrera de Ingeniería de Sistemas Computacionales

### “CLASIFICACIÓN DE IMÁGENES MÉDICAS PARA LA DETECCIÓN DEL CÁNCER DE MAMA MEDIANTE REDES NEURONALES”

Tesis para optar al título profesional de:

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# Clasificación de Imágenes Médicas para la Detección del Cáncer de mama mediante Redes Neuronales

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**Resumen** — En la Actualidad no es fácil la interpretación de imágenes de mamografía y brindar un diagnóstico médico por un profesional de salud, Es que a pesar de la experiencia del profesional no se detecta al 100 % las anomalías ó tumores de manera rápida. Puesto a que no es fácil de interpretar. objetivo principal fue realizar un clasificador de imágenes y aplicar una neurona convolucional. posteriormente de un entrenamiento riguroso de la neurona brindar un diagnóstico eficiente, se muestra que mediante el aumento de entrenamiento el resultado es más eficiente y se disminuye el factor de error. Solo en la segunda prueba de llego 64.3% la efectividad. En la investigación no se presentaron imágenes incompatibles con la red neuronal por lo que no se perdió atributos si se realizaron ajustes de parámetros. Por lo que es demostrable que el sistema tiene gran alcance practico debido a que los recursos usados son de fácil alcance.

**Palabras Clave**— *deep learning, mamografía, clasificación de imágenes, diagnostico.*

**Abstract** — At present, it is not easy to interpret mammography images and provide a medical diagnosis by a health professional. Despite the professional's experience, anomalies or tumors are not detected 100% quickly. Since it is not easy to interpret. main objective was to perform an image classifier and apply a convolutional neuron. After a rigorous training of the neuron to provide an efficient diagnosis, it is shown that by increasing training the result is more efficient and the error factor is decreased. Only in the second test was 64.3% effective. In the research, no incompatible images with the neural network were presented, so no attributes were lost if parameter adjustments were made. So it is demonstrable that the system has great practical scope because the resources used are easy to reach.

**keywords**— *deep learning, mammography, image classification, diagnosis.*

## **NOTA DE ACCESO**

**No se puede acceder al texto completo pues contiene datos confidenciales**

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