

Performance Analysis of Feature Extraction and Selection of Region of Interest by Segmentation in Mammogram Images between the Existing Meta-heuristic Algorithms and Monkey Search Optimization (MSO)

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Abstract: In medical image processing, feature selection and extraction is an important task for performing image classification and recognition which is performed through the image segmentation process. This paper proposes a different approach; Monkey Search Optimization (MSO) which is based on Metaheuristic Algorithm is presented for selecting region of interest in mammogram image. Monkey Search Optimization (MSO) algorithm is considered as a new algorithm searching for optimum solution based on the foraging behavior of monkeys. Pectoral region removed image is given as input for feature extraction. The proposed algorithm can be implemented for various applications as the time consumption for the process is reduced greatly. In this paper the proposed algorithm is compared with few other meta-heuristics algorithms such as Ant Colony Optimization (ACO), Artificial Bee Colony Optimization (ABC) and Particle Swarm Optimization (PSO); from the results that the proposed approach can be considered to be an appropriate algorithm for image segmentation. Results are presented based on simulation made with the implementation in MATLAB which is tested on the images of MIAS database.

Key-Words: MSO, ACO, ABC, PSO, Climb, Watch – Jump and Co-operation.

1 Introduction

Breast Cancer is where cancerous (Malignant) cells are found in the breast tissue. Radiograph of the breast tissue is called mammogram. Getting a mammogram is an effective way to detect breast cancer in its early stages. Breast Cancer is the second leading cancer next to Cervical Cancer.

Breast Cancer is most common in women than men worldwide. The early symptoms of breast cancer is often not recognized or perceived by the patient. The only way to avoid breast cancer in women is early detection either through self – examination or approaching the doctor.

X-ray mammography is the most common investigation technique used by radiologists in

the screening, and diagnosis of breast cancer they could help the radiologists in the interpretation of the mammograms and could be useful for an accurate diagnosis. To perform a semi-automated tracking of the breast cancer, it is necessary to detect the presence or absence of lesions from the mammograms.

1.1 Related Works

The preprocessing technique is also known as background suppression. Before getting into the presence or absence of lesions preprocessing is done to remove the pectoral region, as it is not in need of the whole image [5]. In most conditions any of the filter is used as in [8, 9]. Next to the preprocessing is selecting the Region of Interest or Feature Extraction and Feature Selection

