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Patent Search
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## Abstract:

Hard deposits called gallstones develop inside the gallbladder. They may or may not cause symptoms, and their size and quantity can fluctuate. An imbalance in the components of bile, a fluid the liver produces to help with digestion, can lead to the formation of gallstones. Although the precise aetiology of gallstones is not always known, a number of variables may play a role in their development. Untreated gallstones can lead to significant pain, discomfort, and potentially life-threatening complications. The present invention disclosed herein is a novel method of classification of an ultrasound images for gallbladder disease using Multi-SVM Classifier comprising of: Input Image (101), Pre-Processing (102), Segmentation (103), Feature Extraction (104), Classifier (105), and Performance Measures (106); used to diagnose the gallbladder disease using ultrasound images. The present invention disclosed herein uses Multi-SVM Classifier to classify the ultrasound images to detect gallbladder disease with the identification of the gallstones. The proposed approach detected gallbladder disease with an accuracy of 98.58%. The present invention disclosed herein is implemented in the Matlab R2023B environment to perform segmentation of the gallstones and disease detection.

## **Complete Specification**

Description: The present invention relates to the technical field of Computer Science Engineering.

Particularly, the present invention is related to a novel method of classification of an ultrasound images for gallbladder disease using Multi-SVM Classifier of the broader field of Image Processing in Computer Science Engineering.

More particularly, the present invention is related to a novel method of classification of an ultrasound images for gallbladder disease using Multi-SVM Classifier used to diagnose the gallbladder disease using ultrasound images. The present invention contains herein uses multi-support vector machine as classifier.

## BACKGROUND & PRIOR ART

Gallstone-related disorders represent a significant healthcare burden worldwide, with millions of individuals affected annually. The gallbladder, a small organ located beneath the liver, plays a crucial role in the digestion process by storing and releasing bile produced by the liver. However, the formation of gallstones within the gallbladder can lead to various complications, including cholecystitis, choledocholithiasis, and pancreatitis, among others. Timely and accurate detection of both the gallbladder and gallstones is essential for effective diagnosis and management of these conditions. Conventional diagnostic methods for gallstone-related disorders often involve ultrasound imaging, which provides non-invasive and cost-effective assessment of the gallbladder and biliary system. However, the interpretation of ultrasound images relies heavily on the expertise of radiologists and sonographers, and subtle or early-stage abnormalities may be overlooked. In recent years, the advent of

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