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RETRACTED ARTICLE: Study on metal mine detection from underwater sonar images using data mining and machine learning techniques

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ⓘ This article was retracted on 14 June 2022

ⓘ This article has been updated

Abstract

Ocean mines are the major threat to the safety of great vessels and other living beings in the marine life. It is a self-contained explosive device placed in water to destroy ships or submarines. Due to various factors like variations in operating and target shapes, environmental conditions, presence of spatially varying clutter, compositions and orientation, detection and classification of sonar imagery with respect to underwater objects is a complicated problem. It is well known that many post processing techniques in image processing have done to receive high resolution images to distinguish the objects. However the mentioned technique needs a special method to detect the metal from the usual sub bottom materials mainly rocks. Hence the data collection made in simulated environment locating metals in rock bed and collected with the sonar and the distinguished features of metals from rock have been identified with the totally different approach called intruder detection technique using data mining/machine learning. This paper proposes a novel approach for discriminating and detection of objects in underwater environment with accuracy of 90% (full feature set) and 86% (selected feature set). Hence, it is quite revealing that the new technique is better in classification of mine like objects in underwater, justified with samples of sonar data sets.

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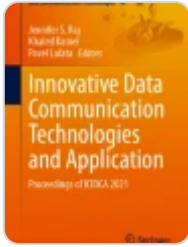
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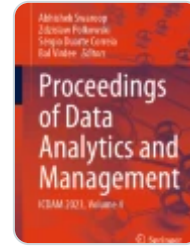
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14 June 2022 This article has been retracted. Please see the Retraction Notice for more detail: https://doi.org/10.1007/s12652-022-04140-0

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