Institute of Acoustics

Proceedings of the Institute of Acoustics

International Conference on Detection and Classification of Underwater Targets

Heriot-Watt University, Edinburgh
18-19 September 2007

Volume 29, Part 6

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Editor: Judith Bell

Institute of Acoustics

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HERIOT WATT UNIVERSITY

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Edinburgh Research Partnership
in Signal and Image Processing

Detection and Classification of Underwater Targets
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Volume 29. Pt. 6 2007

Edited by:
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ISBN 1 901656 88 8
ISSN 1 478-6095

Printed by
Graphic and Printing Services
Heriot-Watt University

FOREWARD

Welcome to the 1st International Conference on Detection and Classification of Underwater Targets organised by the Institute of Acoustics. This conference was seen as timely since the accurate detection and identification of underwater targets continues as a major issue, despite, or as a result of, the promise of higher resolution underwater imaging systems. With the increasing deployment of Autonomous Underwater Vehicles for mine countermeasures applications, the automated processing of the large volumes of data gathered by these vehicles to detect and classify targets has become a critical task. Numerous techniques have been proposed for Computer Aided Detection (CAD) to detect all possible mine-like objects, and Computer Aided Classification (CAC) models to classify whether the detected object is a target or not. The question remains as to whether the perfect technique can be found for all applications, or whether the answer lies in collaboration and data fusion.

The detection of objects is hampered in environments such as shallow water or in regions of complex cluttered seabeds with rock outcrops or seaweed. The design of targets is also becoming more sophisticated to hamper detection with cladding to disguise the shape of the target or attenuate the reflection. One of the most complex to detect are buried targets and the problems of detecting these using conventional systems suggests that a novel approach is required using new sensors, signals or multi-static deployment techniques.

The conference aims to address these problems and considers the entire process of detection and identification, encompassing the design of sensors to aid detection, deployment strategies, signal design, target scattering as well as CAD/CAC processing algorithms. It will also encompass diver detection, harbour surveillance and marine mammal detection as well as detection of mine like targets.

I wish to thank all the contributors for providing such a wide range of interesting and innovative material and especially acknowledge the help of the referees while preparing the manuscripts. Special thanks to Yvan Petillot, Dave Lane, Keith Brown and Ron McHugh at Heriot-Watt for their help with the organisation, the Technical Programme Committee for their input and to our sponsors, who have enabled us to produce the printed proceedings in addition to the electronic version.

Judith Bell
Heriot-Watt University
August 2007

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