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Intelligent Distributed Virtual System for Underwater Acoustic Source Localization and Sounds Classification

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I. Introduction

Underwater acoustic source classification, localization and tracking are challenging tasks due to possible multipaths of sound in the considered environment and to the fact that the measured acoustic signals are mixed with natural or man made underwater noise (e.g. transportation). In the region under observation, the Sado estuary, dolphins and boat engine sounds are those that are mainly present. Referring to the dolphins' sound emissions, they can be classified in different categories: narrow-band-frequency-modulated continuous tonal sounds, referred to as whistles, broadband sonar clicks and broadband burst pulse sounds [1]–[2] and their intensity loss due to spreading is proportional to the square of the distance from the sound source.

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