

SIMILARITY-BASED DATA SELECTION TO IMPROVE AUTOMATIC ACOUSTIC TARGET CLASSIFICATION

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Acoustic surveys provide important data for fisheries management. During the surveys, ship-mounted echo sounders send acoustic signals into the water and measure the arrival time of the reflection, so-called backscatter. Acoustic target classification aims to identify backscatters by categorizing them into specific groups, e.g., sandeel, mackerel, and background (as bottom and plankton). Convolutional neural networks typically perform well for acoustic target classification but fail in cases where the background class is similar to the foreground class. In this poster, we discuss how to address the challenge of class imbalance in the sampling of training and validation data for deep convolutional neural networks. The proposed strategy seeks to equally sample areas containing all different classes while prioritizing background data that have similar characteristics to the foreground class. The Near-Miss algorithm is used to select these tricky areas from the background class in order to detect regions where misclassification is more likely. The poster contains an introduction to acoustic target classification, the description of the deep learning model, the challenges, and the results of the Near Miss algorithm, along with a comparison to the baseline results.

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