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Individual Blue Whale Recognition: Wigner-Ville Time-Frequency Analysis and Preparation for a Kaggle Contest

Among one of the most fascinating sea creatures, the blue whale holds a special place. The largest ever living animal, it has been recognized that they can be tracked remotely at large distances at sea using fixed and moored hydrophones. The frequency range (30-100Hz) of their acoustic calls falls within the range of the IMS hydroacoustic stations and it is thus theoretically possible to track them in oceans where the IMS hydrophone stations provide a complete coverage and if the signal they emit is strong enough to be seen at a minimum of two groups of hydrophones. This may be the case in the Indian ocean where two stations are complete enough at the moment to provide detections and an azimuth provided signal from the same individual can be detected at these two sets of hydrophones. We propose to establish a data set that will be rich enough to contain several blue whale individuals and setup a contest on the Kaggle site. The goal is to determine the best method to be used to distinguish among different individuals using distinctive features of their calls, taking into account transmission loss of acoustic power.

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