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Vessel classification features using spatial Bayesian inference from historical ais data

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Abstract

Detections and classification of non-AIS-compliant vessels is an important ability for countries or institutions interested in MDA. SAR has been proven to be an effective method but there exists a trade-off between the area that can be imaged and the resolution of each image pixel. Large swath SAR images are a cost effective method of performing maritime surveillance but classification or identification from the images remains a challenge. An algorithm to predict the AIS class of a vessel using historical AIS data and SAR derived features is described in this paper. The novel algorithm calculates the class probability by taking historical AIS data into account using a Bayesian algorithm. Features extracted from SAR imagery are then used with the AIS historical data to provide a list of class probabilities that can enhance other course resolution classification algorithms or to flag vessels that do not conform to historical class behaviour.