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Ships as salient objects in synthetic aperture radar

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ABSTRACT

The widespread access to Synthetic Aperture Radar data has created a need for more precise ship extraction, specifically in low-to-medium resolution imagery. While Synthetic Aperture Radar pixel resolution is improving for a large swaths, information about ships from within the Synthetic Aperture Radar intensity imagery is still sparse. Ships that are a few pixels across provide little information for classification and even less when improperly extracted. This paper presents a novel perspective on ships in Synthetic Aperture Radar imagery by viewing them as visually salient objects. The paper introduces common methods of ship object extraction and demonstrates how salient object mapping can improve the accuracy of extracted ships in Synthetic Aperture Radar imagery, providing better representation of ship objects. The Frequency-tuned and Spectral Residual Saliency Maps methods were tested against a unique dataset with ground truth information and were shown to have the best performance amongst all the conventional methods tested using six performance metrics.