**ENHANCEMENT AND CLASSIFICATION OF UNDERWATER IMAGES USING IMAGE SUPER RESOLUTION AND TRANSFER LEARNING**

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# **ABSTRACT**

An emerging technology since the last decade, underwater imaging finds its application in the classification of sub-aquatic objects where they fall for low pixel values, due to the problem of poor color contrast and visibility. Image Super Resolution is used to improve the quality of the image by raising the pixel values, overcomes the problem of underwater images. The proposed deep learning model, Cascading Residual Network (CARN) helps to improve the image's resolution by reducing the network complexity. With the use of Transfer Learning, the resulting enhanced image is then used for object detection and classification to improve the accuracy using YOLO V3 architecture which results in identifying certain classes. Thus, the proposed approach focuses on Image Super Resolution, followed by object detection of the underwater images, to improve better classification of the objects in the image. The multi-label classification along with the localization involved are also included in this method. In addition, when compared with the existing methods, the method used in this work will precisely classify the objects according to their respective classes.

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