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☐ **A Deep Learning Approach to Enhance Underwater Images with Low Contrast, Blurriness and Degraded Color** 🔒

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A Deep Learning Approach to Enhance Underwater Images with Low Contrast, Blurriness and Degraded Color

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Abstract

Document Sections

I. INTRODUCTION

II. RELATED WORK

III. PROPOSED
METHODOLOGY

IV. CONCLUSION

Authors

Figures

Abstract:

This paper presents how to improve underwater images with non-uniform lighting, low contrast, blurriness, and degraded color using a Physical Neural Network (PNN)-based image-enhancing approach. The suggested method is built on the deep learning principle and focuses on a damaged or noisy underwater image's input images, weight & weight maps, and white balance data. The proposed method employs a variety of weight maps, including luminance, contrast, chromatic, and saliency, to create an image that overcomes the limits of the initial or noised image, which lacks distinct clarity. Reduced noise levels and better exposed dark regions, as well as increased global contrast and finer features and edges, can be found in the underwater image, created utilizing the aforementioned processes. The experiments are carried out on the EUVP dataset, and it is observed that the proposed method surpasses other state-of-the-art methods in terms of efficiency.