A NOVEL FRAMEWORK FOR UNDERWATER IMAGE FILTERING

A project report submitted to Jawaharlal Nehru Technological University, Gurajada Vizianagaram in the partial fulfilment of the requirements for the award of degree of

BACHELOR OF TECHNOLOGY

In

ELECTRONICS AND COMMUNICATION ENGINEERING

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(A NAAC A+ Accredited Institution)

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CERTIFICATE

This is to certify that the project work entitled **"A NOVEL FRAMEWORK FOR UNDERWATER IMAGE FILTERING"** is being submitted for partial fulfilment for the award of Bachelor of Technology in Electronics & Communication Engineering is a bonafide work done by P.VASAVI(20811A0452), R.SAIKIRAN(20811A0458), Y.POORNA VENKATESH (20811A0476), P.PRIYANKA (21815A0407), S.SATEESH (20811A0465) under the guidance during year 2023-2024 and it has been found suitable for according to the requirements of the university.

INTERNAL GUIDE

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EXTERNAL EXAMINER

ABSTRACT

Images captured underwater often have low visibility due to two main issues: scattering and absorption of light. This paper introduces a combined approach for enhancing underwater images, which uses underwater white balance followed by filtering Techniques. In this approach, an advanced underwater white balance (UWB) algorithm is combined with histogram stretching. This is done to more effectively offset the attenuation differences along the propagation path and eliminate unwanted color casts. Furthermore, filtering using the hybrid filters on the histogram enhanced images created based on the result obtained from UWB. The blended filtering model excels in enhancing contrast and saturation, as well as removing the hazy appearance caused by scattering. Additionally, we've developed a fast algorithm based on the Gaussian pyramid to expedite the solution of the model. The enhancements our method provides include more effective color correction, haze removal, and detail clarification. Comprehensive qualitative and quantitative evaluations show that our proposed approach yields high-quality results, surpassing several leading methods. Application tests further confirm the effectiveness and wide application potential of our proposed method.