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ORAL DISEASE CLASSIFICATION USING DENTAL IMAGES: A HYBRID MODEL

A Mini Project report submitted in partial fulfillment of the requirement for the Award of degree

BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE AND ENGINEERING

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GMR Institute of Technology
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CERTIFICATE

This is to certify that mini project report titled **"Oral Disease Classification using Dental Images: A Hybrid Model"** submitted by **T.U.S.S.N.L Durga Devi (21341A05I2), Pichchika Balaji (21341A05D9), Yegireddi Eswari (21341A05J7), Gadi Jagadeesh (22345A0519), Rajana Prasad (22345A0517)** has been carried out in partial fulfillment for the award of **Bachelor of Technology** in **Computer Science and Engineering** of **GMRIT, Rajam** affiliated to **JNTUGV, Vizianagaram** is a record of bonafide work carried out by them under my guidance & supervision. The results embodied in this report have not been submitted to any other University or Institute for the award of any degree.

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ABSTRACT

Oral diseases often go undetected, leading to serious health implications. In this research, we propose an intelligent machine for oral disease detection using teeth images. Our approach aims to utilize a hybrid methodology combining EfficientNet for feature extraction and CBAM channel attention for classification. We employ a two-step process: first, extracting last layer features using EfficientNet, and then utilizing CBAM for classification. The hybrid methodology enhances accuracy by leveraging feature extraction and attention mechanisms. We incorporate machine learning algorithms, specifically XGBoost, for symptom-based disease classification and precaution recommendation. The proposed intelligent machine offers a rapid and accurate method for oral disease detection. By utilizing teeth images and machine learning techniques, it facilitates early diagnosis and preventive measures. The integration of hybrid methodology significantly improves disease classification accuracy compared to individual model training. Our hybrid model achieves superior accuracy in oral disease classification, outperforming individual model training. The web platform successfully classifies uploaded images into the five disease classes and provides relevant precautions for disease prevention. The proposed intelligent machine demonstrates promising results in oral disease detection using teeth images. By leveraging hybrid methodology and machine learning algorithms, it offers a valuable tool for healthcare professionals and individuals alike in combating oral diseases.

KEYWORDS: Healthcare, Dentistry, Classification, Image analysis, oral diseases, Deep learning, Hybrid methodology.

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CBAM : Channel Attention Block Module

CAM : Channel Attention Module

CNN : Convolution Neural Network