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| YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING, NAGPUR.  (An autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)    DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING      “**Recognizing stages of Depression & Optimizing through Guided Imagery**”      By- Nikita P. Giradkar | | | | |
| **Abstract:**This research addresses the underdiagnosis of depression, exacerbated by societal stigma and limited diagnostic tools. It pioneers a progressive method for early detection, leveraging confidential data analysis and state-of-the-art machine learning algorithms. Focusing on questioning data, including facial expressions and behavior, the study aims to establish a robust model for identifying different depression stages. The envisioned outcome is a non-intrusive, cost-effective, and timely means of intervention, potentially revolutionizing mental health detection and contributing to improved outcomes through proactive measures. | | | | |
| **Introduction:**  Diabetic retinopathy (DR) is one of the well-known and commonest eye diseases, affecting patients with diabetes mellitus. Signs of diabetic retinopathy include red lesions such as Microaneurysms (MA), intraretinal hemorrhages, and bright lesions such as exudates. Red lesions are the first clinically observable lesions indicating diabetic retinopathy. Therefore, their detection is critical for a prescreening system.Hemorrhages are larger irregular „dot‟ configuration therefore usually they have the same color as blood vessels. Due to non-uniform illumination and contrast across retinal image, it becomes difficult to detect Hemorrhages precisely. The objective is to develop MATLAB based image processing algorithms for detection of hemorrhages in retinal images. Thus, the performance of this algorithm shows that it has an appreciable amount of potential in helping ophthalmologists. | **Methodology:** | | **Evaluation Results**   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  | **FPR** | **FNR** | **WER** |  |  |  |  | **FPR** | **FNR** | **WER** |  |  | | **Hemorrhages** | **1** | **0** | **0.0909** | **R=0.1** | **Hemorrhages** | **0.6327** | **0.05** | **0.1030** | **R=0.1** | |  | **0.1837** | **0.5000** | **0.3418** | **R=1** |  | **0.1429** | **0.3500** | **0.2464** | **R=1** | |  | **0** | **0.9500** | **0.0864** | **R=10** |  | **0** | **0.9500** | **0.0864** | **R=10** |   Evaluation result for algorithm1 Evaluation result for algorithm2    **ROC (TPR vs. FNR)** | |
| **Preprocessing results:**  (a) Input image from (b) Preprocessing steps (c) Optic Disc removal DIARETDB1[2]  **Hemorrhages detection using Algorithm 2:**        (a) Morphologically filled (b) Contrast enhanced image (c) Hemorrhage detection image of preprocessed after noise removal  image | | **Hemorrhages detection using Algorithm 1****:**    (a)Background (b) H maxima (c) Multilevel (d) Hemorrhage  normalization to Transform thresholding detection using  preprocessed image Feature extraction  **Algorithm applied on clinical database:**      (a) Input image from clinical (b) Hemorrhage detected (c) Hemorrhage detected database using algorithm 1 using algorithm 2 | | **Conclusion and Future scope:**  **Conclusion:**  In this study, a new algorithm for automatically detecting hemorrhages in the retinal images is presented. We applied our algorithm to 69 fundus images from DIARETDB1 database and images from clinical database. With the evaluation tools it is demonstrated that the algorithm 2 detected dark lesion with higher accuracy and reliability than algorithm 1. Therefore our system will help in improving diagnostic accuracy as well as in reducing the workload of ophthalmologists in the future.  **Future scope:**  The severity level grading of DR (Diabetic Retinopathy) may be given by analyzing the other dark lesion in retinal images.Several other retinal complications are also to be incorporated into this work in order to complete the whole DR diagnosis. |
| **References:**   * Kuhaneswaran A/L Govindasamy et al, Depression Detection Using Machine Learning Techniques on Twitter Data. ©2021 IEEE * Nafiz Al Asad et al. Depression Detection by Analyzing Social Media Posts of User. In 2019 IEEE * Zhiyong wang et al. Recognition of Audio Depression Based on Convolutional Neural Network and Generative Antagonism Network Model. Digital Object Identifier 10.1109/ACCESS.2020.2998532 IEEE * Hanadi Solieman et al. The Detection of Depression Using Multimodal Models Based on Text and Voice Quality Features. In 2021 IEEE * Yan Ding et al. A Depression Recognition Method For College Students Using Deep Integrated Support Vector Algorithm. Published In 2020 IEEE |