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Computer-Aided Exudate Diagnosis for the Screening of Diabetic Retinopathy

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Abstract : Most diabetes patients tend to suffer from its complication of retina diseases. Therefore, early detection and early treatment are important. In clinical examinations, using color fundus image was the most convenient and available examination method. According to the exudates appeared in the retinal image, the status of retina can be confirmed. However, the routine screening of diabetic retinopathy by color fundus images would bring time-consuming tasks to physicians. This study thus proposed a computer-aided exudate diagnosis for the screening of diabetic retinopathy. After removing vessels and optic disc in the retinal image, six quantitative features including region number, region area, and gray-scale values etc… were extracted from the remaining regions for classification. As results, all six features were evaluated to be statistically significant (p-value < 0.001). The accuracy of classifying the retinal images into normal and diabetic retinopathy achieved 82%. Based on this system, the clinical workload could be reduced. The examination procedure may also be improved to be more efficient.

Keywords : computer-aided diagnosis, diabetic retinopathy, exudate, image processing
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