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Detection of Diabetic Retinopathy using Machine Learning

Dr. R. S. Kawitkar, Gayatri Ganorkar, Avijeet Chokhani, Sanika Dhayabar Patil
Department of Electronic and Telecommunication Engineering
Sinhgad College of Engineering Pune, Maharashtra, India

Abstract: *Diabetic retinopathy (DR) is a fast-spreading disease across the globe, which is caused by diabetes. The DR may lead the diabetic patients to complete vision loss. In this disease there is a progressive damage to the retina if the high blood glucose levels are not controlled. In this scenario, early identification of DR is more essential to recover the eyesight and provide help for timely treatment. DR has mainly two stages, Non-Proliferative Diabetic Retinopathy (NPDR) and Proliferative Diabetic Retinopathy (PDR). Non- proliferative diabetic retinopathy (NPDR) is the early stage of the disease in which symptoms will be mild or nonexistent. It is characterized by the presence of microaneurysms, retinal hemorrhages, and hard exudates. While Proliferative Diabetic Retinopathy (PDR) is the advanced stage, where neovascularization and retinal detachment can occur. The detection of DR can be manually performed by ophthalmologists and can also be done by an automated system. In the manual system, analysis and explanation of retinal fundus images need ophthalmologists, which is a time- consuming and very expensive task, but in the automated system, artificial intelligence is used to perform an imperative role in the area of ophthalmology and specifically in the early detection of diabetic retinopathy over the traditional detection approaches. This paper presents a detailed review of DR with machine learning algorithm and a retinal dataset.*

Keywords: Diabetic retinopathy (DR)

REFERENCES

[1]. J. Staal, M. D. Abramoff, M. Niemeijer, M. A. Viergever, and B. Ginneken, "Ridge-based vessel segmentation in color images of the retina," IEEE Trans. Med. Imag., vol. 23, no. 4, pp. 501–509, Apr. 2004.
[2]. A.Hoover and M. Goldbaum, "Locating the optic nerve in a retinal image using the fuzzy convergence of the blood vessels," IEEE Trans. Med. Imag., vol. 22, no. 8, pp. 951–958, Aug. 2003.
[3]. M. Foracchia, E. Grisan, and A. Ruggeri, "Detection of optic disc in retinal images by means of a geometrical model of vessel structure," IEEE Trans. Med. Imag., vol. 23, no. 10, pp. 1189–1195, Oct. 2004.
[4]. Z. Zhang, B. H. Lee, J. Liu, D. W. K.Wong, N. M. Tan, J. H. Lim, F. S. Yin,W. M. Huang, and H. Li, "Optic disc region of interest localization in fundus image for glaucoma detection in argali," in Proc. Int. Conf. Ind. Electron. Appl., 2010, pp. 1686– 1689.
[5]. X. Zhu and R. M. Rangayyan, "Detection of the optic disc in images of the retina using the hough transform," in Int. Conf. IEEE Eng. Med. Biol. Soc., 2008, pp. 3546–3549.
[6]. J. B. Jonas, W. M. Budde, and S. Panda-Jonas, "Ophthalmoscopic evaulation of the optic nerve head," Surv. Ophthalmol., pp. 293–320, 1999.
[7]. J. Cheng, J. Liu, Y. Xu, D. W. K. Wong, B. H. Lee, C. Cheung, T. Aung, and T. Y. Wong, "Superpixel classification for initialization in model based optic disc segmentation," in Int. Conf. IEEE Eng. Med. Biol. Soc., 2012, pp. 1450–1453.
[8]. J. A. Giaconi, S. K. Law, A. L. Coleman, and J. Caprioli, Pearls of Glaucoma Management. New York: Springer, 2010.
[9]. C.Muramatsu, T. Nakagawa, A. Sawada, Y. Hatanaka, T. Hara, T. Yamamoto, and H. Fujita, "Automated segmentation of optic disc region on retinal fundus photographs: Comparison of contour modeling and pixel classification methods," Comput. Methods Programs Biomed., vol. 101, pp. 23–32, 2011.

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[10]. X. Ren and J. Malik, "Learning a classification model for segmentation," in Int. Conf. Comput. Vis., 2003, vol. 1, pp. 10–17.