Abstract

Humans, being visually oriented, witness the happenings in the surroundings with the help of eyes. In the current scenario, blindness, and visual impairment has become a major and ubiquitous health problem. Although new technologies are rapidly progressing, visual impairment remains a noteworthy problem for worldwide healthcare systems. One of such problems is Cataract. Cataracts causing poor vision may also result in an increased risk of falling and depression. Earlier, it was usual among old age people, but now childhood cataract has become an important cause of blindness and severe visual impairment in children. Existing studies have been done mostly on Fundus image datasets for automatic detection of cataract and grading using a predefined feature set. The challenge is to detect cataract using the normal lens images at an early stage thus allowing people to test for cataract themselves. This would rather ensure that people belonging to remote areas need not reach out to ophthalmologists, just to check whether the person is facing a cataract problem or not. This paper uses CNN models taking normal lens image input for detection of cataract problems.
References

1. Gowrishankar Sahana, Identification and Classification of Cataract Stages in maturity individuals victimization Deep Learning formula 2770, International Journal of Innovative Technology and Exploring Engineering (IJITEE), Volume-8 Issue-10, August 2019.

2. Linglin Zhang et al, Automatic cataract detection and grading victimization Deep Convolutional Neural Network, IEEE ordinal International Conference on Networking, Sensing and management (ICNSC), Calabria, 2017.

3. Evan, Xingzhi, Qian, Justin and Tingying Helen Zeng, Machine Learning on Cataracts Classification victimization Squeeze Net, fourth International Conference On Universal Village, Boston, USA, October 2018.

4. Qinyan Zhang, Zhiqiang Qiao, Yanyan Dong and Ji-Jiang rule, Classification of Cataract structure pictures supported Deep Learning, IEEE International Conference on Imaging Systems and Techniques, Beijing, China, pp 1-5, October 2017.

5. J. V. B. Soares, J. J. G. Leandro, and R. M. Cesar, Retinal vessel segmentation victimization the 2-D physicist ripple and supervised classification. Medical Imaging, IEEE Transactions on Medical Imaging, vol. 25.

6. Jianqiang Lia, He Hana, Linglin, i Zhangb, Bo Liua, Ch’ing Wangc and Jijiang Yangc, Automatic Cataract Detection and Grading victimization Deep Convolutional Neural Network, Ordinal International Conference on Networking, Sensing and management, Calabria, Italy, May 2017.

7. J. J. Yang, J. Q. Li, R. F. Shen, Y. Zeng, J. He, J. Bi, et al., Exploiting ensemble learning for automatic cataract detection and grading, laptop ways and programs in biomedicine, vol. 124, 2016.

8. H. Q. Li, J. H. Lim, J. Liu, P. Mitchell, A. G. Tan, J. J. Wang, et al., A computer-aided designation system of nuclear cataract, IEEE Transactions on medical specialty Engineering, vol. 57, 2010.

9. M. Caixinha, E. Velte, M. Santos, and J. B. Santos, New approach for objective cataract classification supported ultrasound techniques victimization Multiclass SVM classifiers, IEEE International Ultrasonic conference, 2014.

10. J. Zheng, L. Y. Guo, L. H. Peng, J. Q. Li, J. J. Yang, and Q. F. Liang, Fundus image primarily based cataract classification, 2014 IEEE International Conference on Imaging Systems,2014.

11. W. M. Fan, R. F. Shen, Q. Y. Zhang, J. J. Yang, and J. Q. Li, Principal part Analysis primarily based Cataract Grading and Classification, IEEE seventeenth International Conference on E-Health Networking, Applications and Services, pp. 459-462, 2015.

12. L. Y. Guo, J. J. Yang, L. H. Peng, J. Q. Li, and Q. F. Liang, A computer-aided health care system for cataract classification and grading supported structure image analysis, Computers in business, vol. 69,2015.

Index Terms

Computer Science       Artificial Intelligence
Keywords

Cataract detection, CNN, Fundus, Keras, Non-cataract, Normal lens image, TensorFlow.