



A Mathematical Study of Glaucoma Using Machine Learning Algorithms for Retina

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Citation: Prakash, K. & Sudharsan, M. (2021). A Mathematical Study of Glaucoma Using Machine Learning Algorithms for Retina. *Healthcare Review*, 2(1), 24-27.

Research Article

Abstract

Glaucoma is a category of visual disorders represented by optic nerve neuropathy, a means of gradually declining optic nerve neuropathy. In-ground vision, resulting in sight loss. In this article, a novel retinal therapeutic support vector machine for glaucoma using machine Algorithms for learning are conservative. The algorithm has sufficient pragmatism; the correlation clustering mode is subsequently retained the estimated preparation deterrent on a data set has a 91 percent achievement rate on a data set. Consolidation of 500 realistic resolute and glaucoma retina images; hence, depending on the cluster, the computational advantage of In glaucoma therapy, the overlapping device pedestal on the machine learning algorithm has maximum output.

Keywords: Glaucoma, Machine Learning, Retina

1. Introduction

One of the major sources of permanent vision loss is glaucoma, since it affects the fibers and astrocytes of the optic nerve. The early diagnosis of glaucoma has recently become a significant consideration in the medical field, and retinal imaging provides a reliable visualization of the important structures of the eye for different forms of eye examination [1]. Owing to its large population and scarce medical services, this issue has been more severe in China than in other areas. Automatic diagnosis has been found to be successful in treating diagnostic challenges with respect to glaucoma with the growth of IT and health informatics. One critical but underexplored question, however to increase the efficacy of automated diagnosis by recognizing confusion and collecting key information from multimodal evidence, including medical indications, photographs, and texts. This thesis therefore suggests a paradigm of Bayesian Deep Multisource Learning (BDMSL) to resolve these concerns [2].

In pathologic myopia, glaucomatous optic neuropathy. (B) Optic Glaucomatous Diabetic retinopathy-accompanied neuropathy. (C) Without any eye disorders, Glaucomatous optic neuropathy. (D) Efficiency of the Retinal nerve fiber layer [3] [5]. Novel optic nerve head measurements such as Bruch's membrane opening-minimum rim diameter, improved ability to measure glaucomatous macula inner layers, and ability to visualize components of the deep optic nerve head, like lamina cribrosa, are advances in imaging [13].

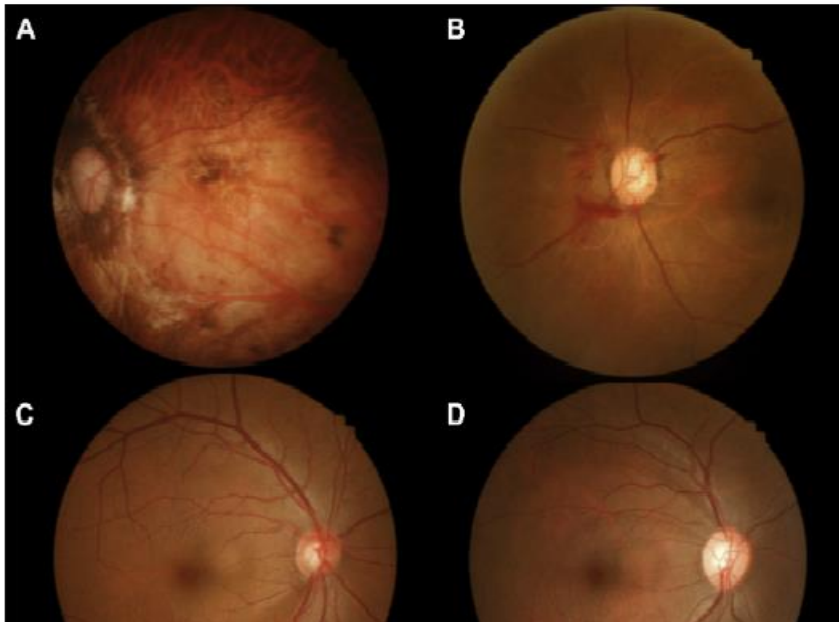


Fig.1: Photographs of the fundus display common false-negative events

The role of AI-based systems in specializations such as radiology, pathology, ophthalmology, and cardiology in performing medical work. It concludes that AI-based systems will boost doctors and are unlikely to replace the traditional relationship between doctor and patient [4]. A total of 775 eyes (<497 patients) examined. A total of 364< 303 eyes were glaucoma suspects, and 108 eyes were ocular hypertensive. In the glaucoma group, 16 of the 26 eyes (61.5%) classified glaucoma, 79 of the 200 eyes (39.5%) classified as normal on the 24-2 test were classified as abnormal on 10-2 visual fields. In ocular hypertensive eyes, 28 of the 79 eyes (35.4) [6]. Frequency-doubling perimetry (FDP) is a new, out-of-the-ordinary, visual field testing method. Its sensitivity and reliability was tested in 16 patients (32 eyes) with ocular hypertension and 21 patients (37 eyes) with early chronic glaucoma. Significant defects were found in almost 10% of hypertensive eyes and in 67.7% of glaucomatous eyes. FDP is an effective and sensitive technique for glaucoma functional loss assessment [10]. We believe that this review may provide detailed, important, interesting, and diverse information to both ophthalmologists and computer scientists about the AI, ML and DL applications in the ophthalmology health care platforms and help facilitate promising clinical practices in the future [8]. Forward-selection and backward-elimination methodology further improved the classification rate and also has the potential to reduce testing time by diminishing the number of visual-field location measurements [11]. In India and the world, diabetic retinopathy (DR) and glaucoma are the emerging causes of blindness and visual impairment. Both diseases do not have any early warning symptoms, and the diseases are reasonably advanced once the symptoms appear. Due to the long-standing nature of the illnesses, the cataract detection and treatment model so successfully developed in India cannot be adopted [12.] Ocular biomechanical properties, coherence tomography (OCT) and fundus photography, and a combination thereof to identify the severity of the disease, determine disease progression, and/or recommend specialized care referral [15]. Most people are unaware that some of the indicators of optic pathway disorders, such as stroke or tumor, may be detected or referred to as a visual field defect from the loss portion of human vision. The site, size and margin of the lesion will be manually examined by the ophthalmologist from patient visual field points mapped by the Humphrey Field Analyzer. Different lesion locations, sizes and margins suggest different

2. Comparative Study

We compared these findings here

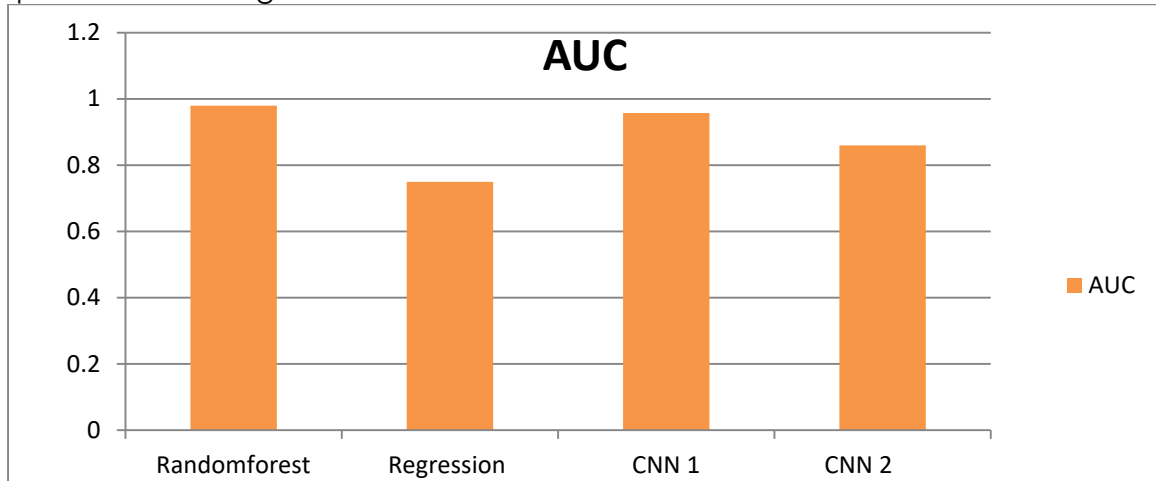


Figure 2: Comparison for machine Learning Algorithms.

We composed almost four Random forest and regression algorithms compared to the generated graphical representation format, CNN-1 and CNN-2. The Random Forest Algorithm is the best comparative outcome algorithm.

3. Conclusion

The findings demonstrate that by using quantified ocular parameters obtained from ophthalmic examination devices, the proposed method can objectively identify the glaucomatous optic disc shape with Random forest and regression algorithms compared to the generated graphical representation format, CNN-1 and CNN-2. In regular clinical glaucoma treatment, the confidence of each expected optic disc form and the obtained contributing ocular parameters will help.

Conflict of Interest: The authors declare no conflict of interest.

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