**A note on Literature Review**

**Definition:**

“Literature review is a comprehensive summary of previous research on a topic. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research.”[[1]](#footnote-2)

**Descriptions:**

* The review should enumerate, describe, summarize, objectively evaluate and clarify this previous research studies. It should give a theoretical base for the research and help the author to determine the nature of the research. The literature review acknowledges the work of previous researchers, and in doing so, assures the reader that your work has been well conceived. It is assumed that by mentioning a previous work in the field of study, that the author has read, evaluated, and assimilated that work into the work at hand.
* A literature review creates a "landscape" for the reader, giving her or him a full understanding of the developments in the domain area. This landscape informs the reader that the author has indeed assimilated all previous, significant works in the field into her or his research.[[2]](#footnote-3)
* "In writing the literature review, the purpose is to convey to the reader what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are. The literature review must be defined by a guiding concept (eg., your research objective, the problem or issue you are discussing, or your argumentative thesis). It is not just a descriptive list of the material available, or a set of summaries.”[[3]](#footnote-4)

**Review -1: Medinoid: Computer-Aided Diagnosis and Localization of Glaucoma Using Deep Learning**

**Introduction**

Glaucoma is type of eye-related disease which leads to blindness if it is left untreated. The progression of glaucoma remains undetected until it damaged the optic nerve irreversibly. These irreversible damages may result of different degrees of completely vision loss [1]. The progression in the glaucoma make the changes in the optic disc such as rim thinning or notching, and parapapillary retinal nerve ﬁber defects become representative morphologicalpatterns[2],[3]. A fundus images are used to capture these patterns and make anophthalmologist capable to diagnose glaucoma through manual screening utilizing fundus images. Due to the diverse nature of optic disc and human-eye retina morphology [4], [5]human diagnosis methods requires an extensive type of medical images e.g.,Optical Coherence Tomography (OCT) disc/macula, perimetry, Retinal Nerve Fiber Layer (RNFL),to get an improved performance. Nevertheless, the process of image capturing and manual screening is costly and time consuming.

Therefore, computer automated diagnosis methods and techniques are developed for glaucoma identification in the literature study. In this study, the authors proposed an automated diagnosis method based on deep learning approach utilizing fundus images.

**Methodology**

In this study authors proposed a predictive model based on deep learning and Gradient-weighted Class Activation Mapping (Grad-CAM) method, for diagnosing the human-eye disease glaucoma. These models are trained on privately collected fundus images dataset. Moreover, the proposed algorithm is integrated on beck-end with a publicly-available prototype web application namely Medinoid for diagnosis and localization of glaucoma.

**Experimental results**

The experimental outcomes reveal that the proposed predictive model achieves substantial improvement over the state-of-the art methods in terms of diagnosis accuracyof 96%, high sensitivity of 96%and a high speciﬁcity of 100% for Dataset-Optic Disc (OD), a set of center-cropped fundus images highlighting the optic disc.

**Conclusion**

This study concludes that deep neural network ResNet-152-Mperforms better in the diagnosing among all the metrics used. Furthermore, Grad-CAM, a localization method correctly localized the glaucoma in the given image. It is evident from the outcomes that deep learning approaches is more efficient in diagnosing and can perform better in medical image analysis.

**References**

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**Review -2: Automatic Detection of Diabetic Retinopathy in Retinal Fundus Photographs Based on Deep Learning Algorithm**

**Introduction**

The main risk associated with diabetes is the diabetic retinopathy (DR). It is the retinal vascular disease, which can cause to visual impairment or permanent vision loss if not detected at early stage [1]. Early diagnosis and proper checkup [2] on regular basis could prevent the vision from permanent loss and blindness. This prevention can play an effective role in providing optimal solution for the treatment of DR. The early diagnosis of DR are handle through conventional methods based on fundus images. Nevertheless, the conventional and manual methods exist a challenges in diagnosing DR. These challenges may depend on many reasons which includes subject to substantial inter- and intra-observer variability, experience and knowledge on ophthalmologists, which may cause inconsistency in the results interpretation, delaying true diagnosis and creating a drain on health-care resources [3], [4]. To overcome these challenges and DR diagnosis with more efficiently and accurately, this study proposed an automated deep learning approach and design a framework using fundus photographs for DR screening.

**Methodology**

This research proposed a deep learning model inception-v3 [5] via transfer learning approach for DR detection in retinal fundus photographs. The fundus images are categorized in accordance with the various degrees of the disease in subject with DR detection in retinal fundus photographs, mild non-proliferative DR (NPDR), moderate NPDR, severe NPDR, and proliferative DR (PDR). The preprocessing technique is employed for training the proposed model. The performance of the model is evaluated with 10-fold cross validation strategy.

**Experimental outcomes**

According to the experimental outcomes, the proposed approach obtained a state-of-the-art performance with classification accuracy 93.49%. Similarly, 96.93% sensitivity, 93.45% specificity.

**Conclusion**

The proposed approach with efficient and accurate results, the authors recommendations are extended to further evaluation and reliable diagnosis through this approach.

**References**

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**Review -3: Automated detection of diabetic retinopathy using SVM**

In this study, the authors Enrique V. C et al. proposed computer-based automated approach using digitally processed retinal images for early detection of diabetic retinopathy. First, the images are distributed based on degree or stage of the diabetic retinopathy. This distribution contains images with three different degrees of disease i.e., blood vessels, microaneurysms and hard exudates. Features are extracted from the images undependably and fed into the support vector machine (SVM) to classify the degrees of the diabetic retinopathy. The proposed approach is evaluated on total 400 images (three different degrees photographs diabetic retinopathy) and obtained a maximum sensitivity and productivity capacity with of 95% and 94% respectively.

1. <https://guides.library.bloomu.edu/litreview> [↑](#footnote-ref-2)
2. <https://guides.library.bloomu.edu/litreview> [↑](#footnote-ref-3)
3. (<http://www.writing.utoronto.ca/advice/specific-types-of-writing/literature-review>) [↑](#footnote-ref-4)