**PERMONCE COMPARISON OF DIFFERENT MOLECULAR DATA IN THE IDENTIFICATION OF DIABETIC RETINOPATHY**

# ANNOTATED BIBLIOGRAPHY

IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF THE DEGREE OF BACHELOR OF THE SCIENCE OF ENGINEERING

**Submitted by:**

# ASHFA A.G.F. (2019/E/011)

DEPARTMENT OF COMPUTER ENGINEERING

FACULTY OF ENGINEERING

**UNIVERSITY OF JAFFNA**

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**ARTICLE 01**

**2019/E/011**

**WEEK 01**

(1)Kamble, Vaibhav V., and Rajendra D., “Automated diabetic retinopathy detection using radial basis function”, Procedia Computer Science, vol.167, no. , pp. 799-808, 2020. Available: 10.1016/j.procs.2020.03.429.

(2) This paper automatically separates retinal images as Non-Diabetic Retinopathy or Diabetic Retinopathy based on the radial basis function (RBF) neural network classifier. (3) Radial basis function (RBF) analysis of retinal images is one of the research approaches used in the paper to design an automated system for diagnosing diabetic retinopathy. (4) As stated in the title, the focus of this paper is on the creation and assessment of an automated system for diabetic retinopathy utilizing RBF. (5) Insights into one particular technique for detecting diabetic retinopathy are provided in this research, which can be contrasted with molecular data-based methods.(6) The absence of a thorough comparison with other diabetic retinopathy detection techniques and a potential lack of generalizability to different demographics or data sets could be considered the paper's limitation.(7) The system was tested using two datasets and achieved a sensitivity of 0.83 and 0.94, respectively. The researcher suggested incorporating multiple classifier systems (MCS) to improve the system’s accuracy. (8) This research also used machine learning algorithms to separate DR and non-DR patients.

**ARTICLE 02**

**2019/E/011**

**WEEK 02**

(1)Das, D., Biswas, S.K. and Bandyopadhyay, S., “A critical review on the diagnosis of diabetic retinopathy using machine learning and deep learning”, *Multimedia Tools and Applications*, vol.*81* (18), no., pp.25613-25655, 2022. Available: 10.1007/s11042-022-12642-4.

(2)This article reviewed the studies related to automatic diabetic retinopathy detection systems using deep learning methods and images. (3) The research methodologies used in this work involve a systematic evaluation and analysis of pertinent papers. The paper's objective is to critically examine the body of literature on the diagnosis of diabetic retinopathy using machine learning and deep learning. (4) The scope of this review is to provide a thorough evaluation and critical critique of the machine learning and deep learning methods used to diagnose diabetic retinopathy. (5) This review provides insights into innovative machine learning and deep learning techniques that may be compared to those based on molecular data. (6) Potential biases in the studies that were chosen as examples and the lack of a direct comparison to identification techniques based on molecular data may be considered this paper's shortcomings. (7) ML and DL can improve the diagnosis of DR. These techniques are more accurate than traditional methods of DR diagnosis. (8) The paper discussed challenges such as data acquisition, preprocessing, and model constraints. These discussions and challenges are helpful for our research.

**ARTICLE 03**

**2019/E/011**

**WEEK 03**

(1)Gupta, S., Thakur, S. and Gupta, A., “Optimized hybrid machine learning approach for smartphone based diabetic retinopathy detection”, *Multimedia Tools and Applications*, vol.*81* (10), pp.14475-14501, 2022. Available: 10.1007/s11042-022-12103-y.

(2) This paper's introduction gives a general overview of the issue of diabetic retinopathy and proposes a hybrid machine learning approach that has been tailored for smartphone technology. (3) The aim of the research paper is to build and improve a hybrid machine learning strategy for the diagnosis of diabetic retinopathy utilizing data obtained from smartphone imaging. The research methodologies entail putting the suggested methodology into practice and evaluating it.(4) The scope of this study is to build and improve a hybrid machine learning approach that is designed exclusively for smartphone-based diabetic retinopathy identification.5) This paper is helpful and interesting as it is using machine learning to detect diabetic retinopathy, particularly it explores the potential of smartphone-based images. (6) The model was developed and evaluated using a small dataset of fundus images. Further studies are needed to confirm this paper's findings as the sample size is very small. (7) The optimized hybrid machine learning approach can accurately and efficiently detect diabetic retinopathy in a smartphone-based platform which can potentially improve healthcare access for diabetic patients. (8) This paper examines the performance of a machine learning strategy for smartphone-based DR detection.

**ARTICLE 04**

**2019/E/011**

**WEEK 04**

(1) Nomura, A., Noguchi, M., Kometani, M., Furukawa, K. and Yoneda, T., “Artificial intelligence in current diabetes management and prediction,” *Current Diabetes Reports*, vol.*21*(12), pp.61, 2021. Available: 10.1007/s11892-021-01423-2.

(2) Artificial Intelligence (AI) can potentially improve diabetes care by automating tasks, making personalized recommendations, and predicting future outcomes. (3) The research conducted a literature assessment on the application of AI to the prediction and management of diabetes. Additionally, it recognized the corresponding potential and difficulties. (4) In the paper, numerous AI applications for managing diabetes were discussed, including automated retinal screening, clinical decision support, population risk prediction, and patient self-management tools. (5) This paper provided a comprehensive overview of the current state of AI in diabetes care. (6) The paper focused on the opportunities and challenges of AI in diabetes management and prediction. Still, it did not provide a detailed discussion of specific implementation strategies or technical aspects of AI. (7) According to the paper's conclusion, the suggested optimized hybrid machine learning approach shows superior results for smartphone-based diabetic retinopathy detection, indicating potential for widespread screening and early identification. (8) The authors found that AI-based models can outperform traditional methods in the detection of DR. AI could be a valuable tool for early diagnosis and treatment of this disease.

**ARTICLE 05**

**2019/E/011**

**WEEK 05**

(1)Miotto, R., Wang, F., Wang, S., Jiang, X., & Dudley, J. T., Deep learning for healthcare: review, opportunities and challenges, Briefings in bioinformatics, vol.19(6), pp.1236-1246, 2018. Available: 19/6/1236/3800524

(2) Deep learning is effective in various healthcare applications including disease diagnosis, prognosis, and treatment planning. (3) The current state of DL in healthcare was examined, along with the benefits and drawbacks of employing this technology, in this report. It also made suggestions for further research. (4) In relation to DL in healthcare, the paper discussed several subjects. (5) This paper is helpful for researchers in healthcare and provides a comprehensive overview of the potential uses of deep learning in healthcare. (*6*) This paper may have some drawbacks, including a potential lack of precise methodology for molecular data analysis and a lack of special attention on the performance comparison of various molecular data in the detection of diabetic retinopathy. (7) The authors concluded that DL has the potential to revolutionize healthcare. However, they also alert us that several challenges must be addressed before applying this technology. (8) The authors discussed the potential of DL to improve the accuracy of disease diagnosis, which supports the scope of our study.

In summary, this response contains eight sentences covering the following aspects:

1. Citation
2. Introduction
3. Aims and Research methods
4. Scope
5. Usefulness to our research
6. Limitation
7. Conclusion
8. Reflection.