e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:04/April-2024 Impact Factor- 7.868 www.irjmets.com

MELONOMA SKIN CANCER DETECTION USING CNN ALGORITHM

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DOI : https://www.doi.org/10.56726/IRJMETS53156

ABSTRACT

Melanoma, a type of skin cancer, is one of the deadliest forms of cancer if not detected early. In recent years, convolutional neural networks (CNNs) have shown promising results in medical image analysis tasks including skin cancer detection. This study proposes a CNN-based approach for melanoma detection using dermatoscopic images. The proposed algorithm preprocesses the images, extracts features using CNN architecture, and classifies the images as malignant or benign. We evaluate the performance of our method using standard metrics such as accuracy, sensitivity, specificity, and area under the receiver operating characteristic curve (AUC-ROC). Experimental results on benchmark datasets demonstrate the effectiveness of the proposed CNN algorithm in accurately identifying melanoma, thereby aiding in early diagnosis and timely treatment, ultimately improving patient outcomes and reducing mortality rates.

Keywords: Melanoma, CNN.

I. INTRODUCTION

Melanoma, a deadly form of skin cancer, poses significant risks if not detected early. Leveraging recent advancements in convolutional neural networks (CNNs), this study presents a novel approach for melanoma detection using dermatoscopic images. Our proposed algorithm preprocesses images, employs CNN architecture to extract features, and performs classification into malignant or benign categories. Evaluation of our method utilizes standard metrics including accuracy, sensitivity, specificity, and area under the receiver operating characteristic curve (AUC-ROC). Experimental results on benchmark datasets underscore the efficacy of our CNN-based approach in accurately identifying melanoma. This holds promise for early diagnosis, facilitating timely treatment interventions, and potentially reducing mortality rates, thus enhancing patient outcomes.

II. METHODOLOGY

DATA SELECTION

The data selection is the process of selecting the data for skin image dataset. The dataset which contains the information about the skin grayscale images are selected and are loaded to train and test the data for the model. The image that are selected according to different skin diseases of our choices. They are saved under the dataset folder depicting their name of the disease with images.

BUILD THE MODEL

Melanoma skin cancer detection model involves leveraging the power of Convolutional Neural Networks (CNN). Employing advanced image processing, feature extraction, and deep learning techniques, the CNN algorithm enhances the model's capability to accurately identify and classify skin abnormalities, contributing to more precise diagnostic outcomes for clinical applications.

COMPILE THE MODEL

Compiling the melanoma skin cancer detection model entails optimizing the neural network architecture and configuring parameters for efficient execution. The process involves integrating libraries, dependencies, and tuning settings, ensuring the model is ready for deployment. This meticulous compilation ensures the algorithm's readiness to analyze skin images and provide accurate diagnostic insights in clinical settings.

PREDICTION

It is a process of predicting the Skin cancer from the dataset. To predict the data from dataset by enhancing the performance of the overall prediction results.

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III. CONCLUSION

To conclude that early detection of cancer through screening based on imaging is probably the major contributor to a reduction in mortality for certain cancers. It can be considered as a benchmark for skin cancer detection by assisting the healthcare professionals. Implementing future enhancements for melanoma detection could involve leveraging advanced artificial intelligence algorithms, incorporating deep learning models trained on diverse datasets, and integrating real-time image analysis. Additionally, continuous refinement based on evolving medical research and technological advancements can contribute to improving the accuracy and efficiency of melanoma detection systems.

IV. REFERENCES

[1] G. Goodson, S. R. Florell, M. Hyde, G. M. Bowen, and D. Grossman,' 'Comparative analysis of total body and dermatoscopic photographic monitoring of nevi in similar patient populations at risk for cutaneous melanoma,'' Dermatol. Surg., vol. 36, no. 7, pp. 1087–1798, Jul. 2010.

[2] Y. Filali, S. Abdelouahed, and A. Aarab, ''An improved segmentation approach for skin lesion classification,'' Stat. Optim. Inf. Comput., vol. 7,pp. 456–467, Jun. 2019.

[3] A. Adegun and S. Viriri, ''Deep learning techniques for skin lesion analysis and melanoma cancer detection: A survey of state-of-the-art,'' Artif. Intell.Rev., pp. 1–31, Jun. 2020.

[4] I. Goodfellow, J. Pouget-Abadie, M. Mirza, B. Xu, D. Warde-Farley, S. Ozair, A. Courville, and Y. Bengio, ''Generative adversarial nets,'' in Proc. Adv. Neural Inf. Process. Syst., Montreal, QC, Canada, vol. 2, 2014,pp. 2672–2680.

[5] T. Mendonca, P. M. Ferreira, J. S. Marques, A. R. S. Marcal, and J. Rozeira,''PH2—A dermoscopic image database for research and benchmarking,'' in Proc. 35th Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. (EMBC), Osaka Japan, Jul. 2013, pp. 5437–5440.