Detection of Skin Cancer using Convolutional Neural Network

Vishwajeet Jadhav[1], Shivani Mane[2], Pranay Allepally[3], Neha Sonawane[4], Prof. Santosh Kale[5]

Students, Department of Computer Engineering[1,2,3,4]
Guide, Department of Computer Engineering[5]
N.B.N Sinhgad School of Engineering, Pune, Maharashtra, India

Abstract: *Humanity faces a serious threat from skin cancer. Because of Melanoma skin cancer's quick development rate, high treatment costs, and high mortality rate, the importance of early skin cancer diagnosis has increased. Cancer cells are carefully found, and in most cases, treatment takes time. Using image processing and machine learning, this paper suggested an artificial skin cancer diagnosis system. After segmenting the dermoscopic pictures using the feature extraction approach, the characteristics of the damaged skin cells are retrieved. The retrieved features are stratified using a convolutional neural network classifier based on deep learning. After using the publicly accessible data set, an accuracy of 89.5 percent and a training accuracy of 93.7 percent were reached.*

Keywords: Melanoma, Feature Extraction, Machine Learning, Convolution Neural Network, Information Search and Retrieval

REFERENCES

[1]. Geoffrey E. Hinton Alex Krizhevsky, Ilya Sutskever. 2012. ImageNet Classification with Deep Convolutional Neural Networks. Neural Information Processing Systems (2012).

[2]. Spencer Shawna Bram Hannah J, Frauendorfer Megan and Hartos Jessica L. 2017. Does the Prevalence of Skin Cancer Differ by Metropolitan Status for Males and Females in the United States? Journal of Preventive Medicine 3, 3:9 (2017), 1–6. https://doi.org/10.21767/2572-5483.100019

[3]. Koby Crammer and Yoram Singer. 2005. Online ranking by projecting. Neural Computation 17, 1 (2005), 145–175.

[4]. Swati Srivastava Deepti Sharma. 2016. Automatically Detection of Skin Cancer by Classification of Neural Network. International Journal of Engineering and Technical Research 4, 1 (2016), 15–18.

[5]. A. Goshtasbya D. Rosemanb S. Binesb C. Yuc A. Dhawand A. Huntleye L. Xua, M. Jackowskia. 1999.

[6]. Shweta V. Jain Nilkamal S. Ramteke1. 2013. ABCD rule based automatic computeraided skin cancer detection using MATLAB. International Journal of Computer Technology and Applications 4, 4 (2013), 691–697.

[7]. World Health Organization. 2019. Skin Cancer. Retrieved March 16, 2019 from http://www.who.int/en/

[8]. ISIC project. 2018. ISIC Archive. Retrieved March 16, 2019 from https://www. isic-archive.com

[9]. Sibi Salim RB Aswin, J Abdul Jaleel. 2013. Implementation of ANN Classifier using MATLAB for Skin Cancer Detection. International Journal of Computer Science and Mobile Computing (2013), 87–94.

[10]. Alexander Wong David A. Clausi Robert Amelard, Jeffrey Glaister. 2014. Melanoma Decision Support Using Lighting-Corrected Intuitive Feature Models. Computer Vision Techniques for the Diagnosis of Skin Cancer, Series in Bio Engineering (2014), 193–219. https://doi.org/10.1007/978-3-642-39608-3_7

[11]. Wild CP Stewart BW. 2014. World Cancer Report. Retrieved March 16, 2019 from http://publications.iarc.fr/Non-Series-Publications/World-Cancer-Reports/ World-Cancer-Report-2014

[12]. Cancer Research UK. 2012. Cancer World Wide - the global picture. Retrieved March 16, 2019 from http://www.cancerresearchuk.org/cancer-info/cancerstats/ world/the-global-picture/

[13]. Xin Yao. 1999. Evolving artificial neural networks. Proc. IEEE 87, 9 (1999), 1423 – 1447. https://doi.org/10.1109/5.784219 [14] Mi Zhang, Jie Tang, Xuchen Zhang, and Xiangyang Xue. 2014. Addressing cold start in recommender systems: A semi-supervised co-training algorithm. In Proceedings of the 37th international ACM SIGIR conference on Research & development in information retrieval. ACM, 73–82.