IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, February 2024

A Comprehensive Approach to Vitamin Deficiency Detection through Image Analysis of Skin, Tongue, Eyes and Nail Images using Convolutional Neural Networks

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Abstract: *This research presents a free artificial intelligence-based smartphone application designed to detect vitamin deficiencies among individuals by utilising images of specific parts of the body. Current approaches for detecting vitamin deficiencies requires an expensive laboratory analysis. Several vitamin deficiencies can exhibit one or more easily identified signs and indicators that manifest in various parts of the human body. Through the examination of images of their eyes, lips, tongue, and nails, users of the application can determine whether they may be lacking in any vitamin without having to give blood samples. Using nutritional micro-correction, the program then suggests a list of sources of nutrients for tackling the identified deficiency and its expected consequences. Through collecting and validating visual data of individuals, medical professionals can also help the platform improve its detection and accuracy capabilities. Allowing more advanced picture analysis and feature extraction skills that could eventually outperform human medical condition diagnosis. In addition to helping individuals solve a global issue that affects millions of people due to a lack of nutritional understanding, our software will eventually assist medical professionals in making more accurate diagnoses.*

Keywords: Vitamins Deficiency, AI, Image Processing, CNN, Nutrients

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