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Communications in Computer and Information Science 1798

Advanced Network Technologies and Intelligent Computing

Second International Conference, ANTIC 2022
Varanasi, India, December 22–24, 2022
Proceedings, Part II

Part 2

Springer

ANTIC 2022

Bibliographic Information

Book Title
Advanced Network Technologies and Intelligent Computing

Book Subtitle
Second International Conference, ANTIC 2022, Varanasi, India, December 22–24, 2022, Proceedings, Part II

Editors
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Series Title
Communications in Computer and Information Science

DOI
https://doi.org/10.1007/978-3-031-28183-9

Publisher
Springer Cham

eBook Packages
Computer Science, Computer Science (RO)

Softcover ISBN
978-3-031-28182-2
Published: 22 March 2023

eBook ISBN
978-3-031-28183-9
Published: 21 March 2023

Series ISSN
1865-0929

Series E-ISSN
1865-0937

Edition Number
1

Number of Pages
XXVI, 670

Number of Illustrations
92 b/w illustrations, 283 illustrations in colour

Table of contents (46 papers)

A Dehusked Areca Nut Classification Algorithm Based on 10-Fold Cross-Validation of Convolutional Neural Network

Conference paper | First Online: 22 March 2023
pp 35–45 | Cite this conference paper

Sameer Patil, Aparajita Naik, Marlon Sequeira & Jivan Parab

Part of the book series: Communications in Computer and Information Science ((CCIS,volume 1798))

Included in the following conference series:
International Conference on Advanced Network Technologies and Intelligent Computing

Abstract

In the process of production of Areca nut, segregation is one of the important stages. As of now, most commercial retailers use skilled workers for quality segregation, which means a lot of time is required for finalising the product costing. In this paper, Convolutional Neural Network (CNN) and MobileNet based methodology was proposed to identify the healthy and diseased Areca nut. The dataset containing images of healthy and diseased nuts was created. Furthermore, the augmentation method was applied to enhance the dataset. The confusion matrix was applied to check the performance of the models and the same was cross-validated using the 10-fold method. The CNN and MobileNet achieved accuracy, precision, recall, and an F1-score of 100%. After applying the 10-fold method, the CNN achieved average accuracy, precision, recall, and F1-score of 95%, 97%, 96%, and 94%, respectively. Whereas, MobileNet outperforms CNN by 100% for all metrics.