List of publications

Journal Papers

Begum, N., and Hazarika, M. K. Prediction of Physico-chemical Properties in Tomatoes using Deep Neural Architecture. *Agricultural Research*, 2024. http://dx.doi.org/10.1007/s40003-024-00827-2

Begum, N., and Hazarika, M. K. Maturity detection of tomatoes using transfer learning. *Measurement: Food*, 7, 2022. DOI: https://doi.org/10.1016/j.meafoo.2022.100038

Begum, N., and Hazarika, M. K. Deep Learning based image processing solutions in food engineering: A review. Agricultural Reviews. 43(3): 267-277. 2022. DOI: https://doi.org/10.18805/ag.R-2182

Book Chapters

Begum, N., and Hazarika, M. K. Artificial intelligence in agri-food systems—An introduction. In *Internet of Things and Analytics for Agriculture*, volume 3, pages 45-63, Springer, Singapore, 2022. DOI: http://dx.doi.org/10.1007/978-981-16-6210-2_3

Begum, N., Rizwana, S., and Hazarika, M. K. Artificial intelligence-based quality inference for food processing industry applications. In *Intelligent Systems and Machine Learning for Industry*, pages 223-240. CRC Press, Taylor and Francis group, 2022.

List of Manuscript under revision

Begum, N., and Hazarika, M. K. Spoilage Detection of Tomatoes using Convolutional Neural Network. Research in Agricultural Engineering (Revision submitted) Manuscript ID 31/2024-RAE, 2024

Manuscript under acceptance

Begum, N., and Hazarika, M. K. Development of an image-based android application for quality inference of tomato. CIGR Agricultural Engineering International (accepted) Manuscript ID 9541

Appendices

Fig. A1 Tomato samples for performance evaluation of customized CNN model

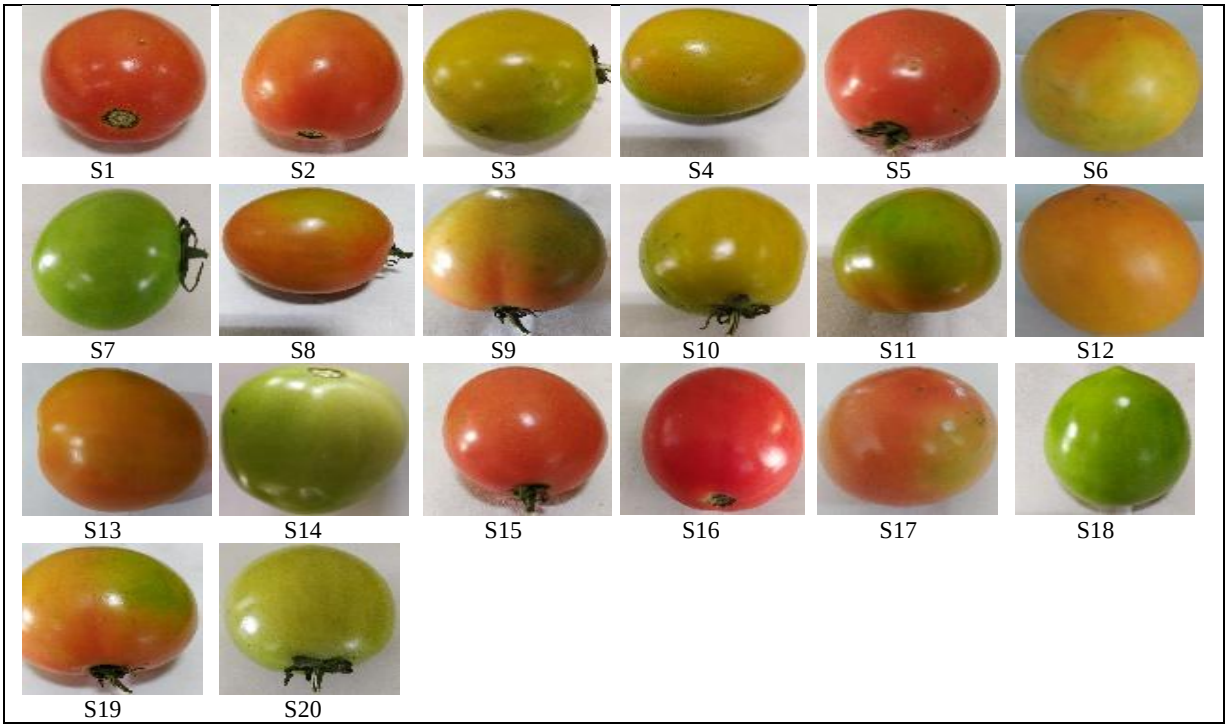


Fig. A2 Tomato samples for performance evaluation of transfer learning models

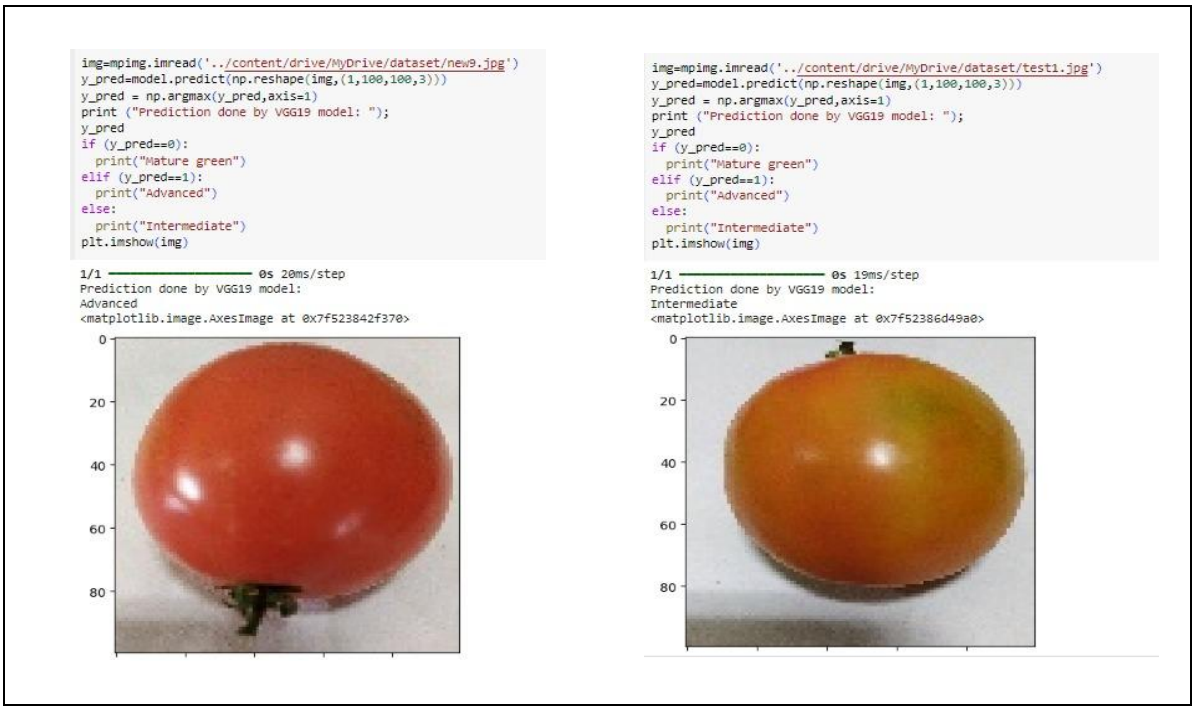


Fig. A3 Ripening stage detection using VGG 19

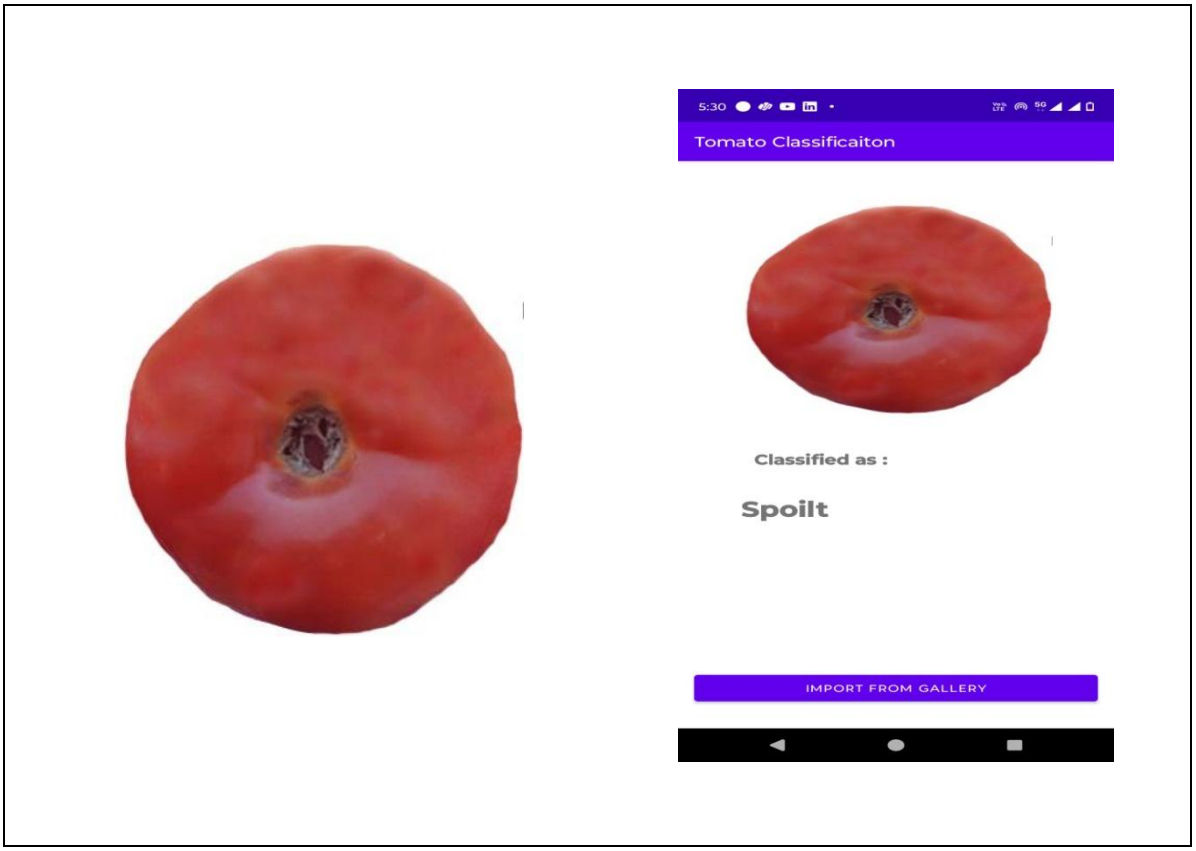


Fig. A4 App Inference on a tomato sample from USDA defect category

Screen shots of publications

277227592200017X

View PDF Download full issue

ELSEVIER

Measurement: Food
Volume 7, September 2022, 100038

Maturity detection of tomatoes using transfer learning

Ninja Begum, Manuj Kumar Hazarika

Show more

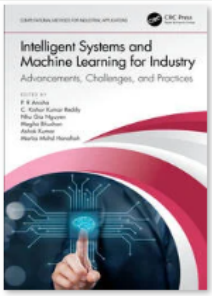
+ Add to Mendeley Share Cite

https://doi.org/10.1016/j.meafoo.2022.100038

Get rights and content

Abstract

Artificial Intelligence is occupying an extensive position in every field of study. In the field of Food and Agriculture it is an emerging topic which is gaining lot of attention. Such techniques are much smarter compared to traditional techniques. So it has successfully emerged into this domain of study. Inspired by its potentiality, this work is an attempt to apply deep transfer learning which is a sub category of artificial



Chapter

Artificial intelligence-based quality inference for food processing industry applications

By Ninja Begum, Shagufta Rizwana, Manuj Kumar Hazarika

Book Intelligent Systems and Machine Learning for Industry

Edition	1st Edition
First Published	2022
Imprint	CRC Press
Pages	18
eBook ISBN	9781003286745

Share

ABSTRACT

Agriculture 4.0 comes up with an agenda to maximize agricultural productivity by minimizing the losses suffered during different stages of production. And with the boom in population demographics, the call for meals is increasing. Food losses can be prevented if analyzed at the proper time without further delay. Non-destructive food sensing techniques can be very beneficial in this regard if food crops are analyzed at the appropriate time before getting spoiled to ensure the desired quality. Non-destructive techniques are considered green techniques because they involve less wastage and fewer reagents than destructive techniques. At the same time, agriculture 4.0 focuses on IoT and the use of big data to make predictions and take necessary actions. Machine learning and deep learning are examples of artificial intelligence (AI) techniques that have been able to make an outstanding performance in handling huge data and making

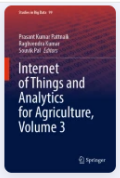
link.springer.com/chapter/10.1007/978-981-16-6210-2_3

Home > Internet of Things and Analytics for Agriculture, Volume 3 > Chapter

Artificial Intelligence in Agri-Food Systems —An Introduction

Chapter | First Online: 11 November 2021

pp 45–63 | Cite this chapter



Internet of Things and Analytics for Agriculture, Volume 3

Ninja Begum & Manuj Kumar Hazarika

Part of the book series: Studies in Big Data ((SBD,volume 99))

Abstract

Artificial intelligence (AI) is a replacement to human intelligence with expanded capabilities that has empowered the industries to handle and drive more complex systems. In agri-food industrial systems, an artificial intelligent system would drive a system

indianjournals.com/ijor.aspx?target=ijor:ar&volume=43&issue=3&article=001

Agricultural Reviews
Year : 2022, Volume : 43, Issue : 3
First page : (267) Last page : (277)
Print ISSN : 0253-1496. Online ISSN : 0976-0741.
Article DOI : 10.18805/ag.R-2182

Deep learning based image processing solutions in food engineering: A review

Begum Ninja*, Hazarika Manuj Kumar
Department of Food Engineering and Technology, Tezpur University, Sonitpur-784 028, Assam, India
*Corresponding Author: Ninja Begum, Department of Food Engineering and Technology, Tezpur University, Sonitpur-784 028, Assam, India, Email: ninzasworld@gmail.com

Online Published on 01 October, 2022.

Abstract

Image based assessment of food quality for wholesomeness, nutritional composition, suitability as raw material for processing, degree of processing, product aesthetics, consumer attractiveness *etc.*, are some of the aspirations for applying machine learning in food technology. The initial contributions made by machine learning in the field of artificial intelligence are now more prominent through the techniques of deep learning. This review presents the contributions of machine learning in obtaining image processing based solutions in food technology and the relative advantages of deep learning over machine learning as the technique for solving complex problems like image recognition and image classification. The deep learning based solutions to the problems of image processing are highlighted as the enablers of disruptions in the design and development of different sorting, grading and dietary assessment tools.

Keywords

Classification, Deep learning, Food, Identification, Machine learning.