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Evolution in Computational Intelligence

Proceedings of the 10th International Conference on Frontiers in Intelligent Computing: Theory and Applications (FICTA 2022)

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Editors: Vikrant Bhateja, Xin-She Yang, Jerry Chun-Wei Lin, Ranjita Das

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Results of FICTA 2022 held at NIT Mizoram, Aizawl, Mizoram, India

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About this book

The book presents the proceedings of the 10th International Conference on Frontiers of Intelligent Computing: Theory and Applications (FICTA 2022), held at NIT Mizoram, Aizawl, Mizoram, India during 18 – 19 June 2022. Researchers, scientists, engineers, and practitioners exchange new ideas and experiences in the domain of intelligent computing theories with prospective applications in various engineering disciplines in the book. These proceedings are divided into two volumes. It covers broad areas of information and decision sciences, with papers exploring both the theoretical and practical aspects of data-intensive computing, data mining, evolutionary computation, knowledge management and networks, sensor networks, signal processing, wireless networks, protocols and architectures. This volume is a valuable resource for postgraduate students in various engineering disciplines.

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Keywords

Computational Intelligence | Artificial Intelligence | Human Computer Interaction | Intelligent Control | Internet Security | Natural Language Processing | Web Intelligence and Computing | FICTA 2022 Proceedings

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Deep Learning-Based Identification of Vegetable Species: System for Specially Abled Persons

Siddhartha Sinha, Arnab Banerjee, Vishal Kumar Patel, Akshay Kisku, Khushi Singh, Debrik Chakraborty & Nibaran Das

Conference paper | First Online: 26 April 2023

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 326)

Abstract

An automatic recognition system is developed to identify six different vegetable species, *Solanum melongena* (eggplant), *Abelmoschus esculentus* (okra), *Solanum tuberosum* (potato), *Raphanus sativus* (radish), *Solanum lycopersicum* (tomato), *and Daucus carota* (carrot). It helps the specially abled persons to buy these vegetables in the market independently in minimum time. The images of the vegetables were taken from various vegetable markets in Durgapur (West Bengal) at different times of the day. The proposed JUDVLP-BCRP: Vegdb.v1 dataset consists of 1800 images with 300 images in each species. After preprocessing the images, some popular deep learning architectures such as MobileNetV2, DenseNet121, and Xception with transfer learning techniques have been used to classify the species accordingly. Unfreezing the top 20% layers of the pre-trained networks and fine-tuning for 40 epochs, 100% accuracy is achieved using DenseNet121 and Xception network individually. The system produces a stable encouraging result in identifying vegetable species and leads to a viable system design.

Keywords

Vegetable identification **Deep learning** **Specially abled** **Transfer learning**

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