

## **Title: Categorization of Dehydrated Food through Hybrid Deep Transfer Learning Techniques**

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**Abstract:** The essentiality of categorizing dry foods plays a crucial role in maintaining quality control and ensuring food safety for human consumption. The effectiveness and precision of classification methods are vital for enhanced evaluation of food quality and streamlined logistics. To achieve this, we gathered a dataset of 11,500 samples from Mendeley and proceeded to employ various transfer learning models, including VGG16 and ResNet50. Additionally, we introduce a novel hybrid model, VGG16-ResNet, which combines the strengths of both architectures. Transfer learning involves utilizing knowledge acquired from one task or domain to enhance learning and performance in another. By fusing multiple Deep Learning techniques and transfer learning strategies, such as VGG16-ResNet50, we developed a robust model capable of accurately classifying a wide array of dry foods. The integration of Deep Learning (DL) and transfer learning techniques in the context of dry food classification signifies a drive towards automation and increased efficiency within the food industry. Notably, our approach achieved remarkable results, achieving a classification accuracy of 99.78% for various dry food images, even when dealing with limited training data for VGG16-ResNet50.

**Key words:** Dry Food, VGG16, ResNet50, Classification, Datasets, Hybrid, Deep Learning, Transfer Learning

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