**Automated Food image Classification using Deep Learning approach**

Food image classification is an emerging research field due to its increasing benefits in the health and medical sectors. For sure, in the future automated food recognition tools will help in developing diet monitoring systems, calories estimation and so on. In this paper, automated methods of food classification using deep learning approaches are presented. SqueezeNet and VGG-16 Convolutional Neural Networks are used for food image classification. It is demonstrated that using data augmentation and by fine-tuning the hyperparameters, these networks exhibited much better performance, making these networks suitable for practical applications in health and medical fields. SqueezeNet being a lightweight network, is easier to deploy and often more desirable. Even with fewer parameters, SqueezeNet is able to achieve quite a good accuracy of 77.20%. Higher accuracy of food image classification is further achieved by extracting complex features of food images. The performance of automatic food image classification is further improved by the proposed VGG-16 network. Due to increased network depth, proposed VGG-16 has achieved significant improvement in accuracy up to 85.07%.

**EXISTING SYSTEM:**

through a set of experiments, that textures are fundamental to properly recognize different food items.food is inherently deformable and shows high divergence in appearance. Since food images have high intra class variance and low inter-class variance due to which classic approaches do not recognize complex features. This makes food recognition a difficult task for which complex features are not recognized .

**DISADVANTAGES OF EXISTING SYSTEM:**

* due to some of the complex features are not recognized by Machine Learning methods.
* Traditional machine learning classification models are not efficient in recognizing complex image features

**Algorithm**: Naive Bayes,K-Nearest Neighbors (KNN).

**PROPOSED SYSTEM:**

Rapid, accurate, and automatic determination of food attributes is a practical demand in daily life.These techniques can acquire a large amount of digital information relating to food properties. Data analysis of these techniques is extremely important due to the fact that the large amount data contain much redundant and irrelevant information. images have high intraclass variance and low inter-class variance due to which some of the complex features are not recognized by Machine Learning methods, but CNNs can easily identify these complex features. These network models based upon deep learning has achieved significant success by automatically discovering very high level features, thus increasing classification accuracy. Therefore, the proposed work intends to use CNNs for food image classification.

**ADVANTAGES OF PROPOSED SYSTEM:**

* The comparative values show that CNNs can easily identify these features automatically, thus increasing classification accuracy.
* The efficiency and suitability of the proposed approach are compared with other suggested methods.

**Algorithm**: Image processing, Machine Learning, Deep Learning, Transfer Learning, VGG-16, SqueezeNet.

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

System : Intel i5 6 core.

Hard Disk : 500 GB SSD.

Monitor : 15’’ LED

Input Devices : Keyboard, Mouse

Ram : 32 GB.

**SOFTWARE REQUIREMENTS:**

Operating system : Windows 10.

Coding Language : Python

Tool : PyCharm, Visual Studio Code

Database : SQLite

**REFERENCE:**

Sapna Yadav; Alpana; Satish Chand “**Automated Food image Classification using Deep Learning approach** " 2021 7th International Conference on Advanced Computing and Communication Systems (ICACCS) Accession Number: 20677431 DOI: 10.1109/ICACCS51430.2021.9441889.