Subject : - Data Science & Big Data Analysis

Topic Name :- Food Quality Evaluation Using Convolutional Neural Networks (CNN)– A Deep Learning Approach

Team Member : -

1) Sanket Kanase
2) Vishal Gavali
3) Soham Haridas

Abstract—

The introduction of AI in food technology has facilitated automatic assessment of food quality. As a result of growing consumption of processed food, ingredient transparency and health effects analysis are critical. Deep learning, especially Convolutional Neural Networks (CNN), has proved effective in food quality analysis using nutritional data. Traditional methods are based on human evaluation or rule-based systems, which tend to exhibit inaccuracies. Current automated approaches also fail in noisy text extraction from food labels, thereby hindering their reliability. This work proposes an artificial intelligence based system using Optical Character Recognition (Tesseract) to read ingredient information, processes and matches it against a pre-existing dataset, and enriches the information using the Edamam API. A Convolutional Neural Network model thereafter predicts a health score and categorizes food products as Good, Moderate, or Bad. This system, as compared to traditional methods, enhances precision by making use of real-time data capture, improved OCR text pre-processing, and CNN-based predictive scoring, thereby achieving an end-to-end solution for food quality assessment. Keywords— Food Quality Assessment, Deep Learning, Convo lutional Neural Networks, OCR, Edamam API, Health Score Prediction