**FRUITS AND VEGETABLES CLASSIFICATION SYSTEM**

**English Abstract:**

The agricultural and food industries are increasingly adopting automation and advanced technology to improve efficiency, productivity, and quality control. This project aims to develop a comprehensive fruits and vegetables classification system using cutting-edge machine learning and computer vision techniques. The system's goal is to accurately identify and categorize different types of fruits and vegetables based on their visual characteristics. It involves data acquisition, preprocessing, feature extraction, model training, evaluation, and deployment. The final system is designed to be robust, scalable, and accurate, contributing to agricultural automation and quality control. The system is deployed in a user-friendly interface, enabling real-time classification of fruits and vegetables.

**Kiswahili Abstract:**

Sekta za kilimo na chakula zinazidi kutumia teknolojia za kisasa na uboreshaji wa kiotomatiki ili kuongeza ufanisi, uzalishaji, na udhibiti wa ubora. Mradi huu unalenga kuunda mfumo wa kina wa uainishaji wa matunda na mboga ukitumia mbinu za kisasa za ujifunzaji wa mashine na maono ya kompyuta. Lengo la mfumo huu ni kutambua na kuainisha aina tofauti za matunda na mboga kulingana na sifa zao za kionekano. Unajumuisha upatikanaji wa data, uchakataji wa awali, uchimbaji wa sifa, mafunzo ya modeli, tathmini, na usambazaji. Mfumo wa mwisho umesanifiwa kuwa thabiti, unaoweza kupanuka, na sahihi, kuchangia uboreshaji wa kilimo na udhibiti wa ubora. Mfumo huu unatumika katika kiolesura cha kirafiki, kuwezesha uainishaji wa wakati halisi wa matunda na mboga.

**Luhya Abstract:**

Inzala ya bulimo ni vya kulia zikhibanga okhurushila okukhorera ebinyanga mu kutembeleha obukule na obuhindi. Iyi ndasaba yenyala okukhebulila esilafu esa khukhubala ebulimo nebutinda busio khuli khule ebia machine khende mbindisole. Ikamachengo kya esilafu kuli khukhwera olwa khukhuba ebichinacha khuli bulimo nebutinda busio. Esilafu eyio yakhasi khukhubola khuli ebindisole ebio ebiara butembele olwe ekhuulu, khulengakhu, khushwala ne okhutila imbecha butendeyi obwalafu. Esilafu eyio yikundanga khushara, bulombe, khulengakhu, khushwala, khukhaba embwilamule ne khukhwiya. Esilafu eyio yendula endele la esisacha, eyula ekhumbo khuli khurusia obulimo obuhindi nebulimo obwenya. Esilafu eyio yeshila khuli ekhuukana khushia bula eyio elole yenyala ekhuuka embecha khuli bulimo ni butinda.