Astana IT University

Final Idea Proposal

Recognition of fruits and vegetables and integrating a calorie counting function.

Group: IT-2207

Made by: A.Nurman, K.Sherkhan

Project Objective: Improving User Health with an Image Recognition App

Our project aims to enhance user health and dietary habits by creating a convenient tool for identifying fruits and vegetables. Additionally, we want to provide accurate calorie information. To achieve this, our team will develop a mobile application that utilizes image recognition technology. Users will be able to take photos of various fruits and vegetables using their smartphone cameras. The app will then use machine learning algorithms to identify the items and provide detailed nutritional information, including calorie counts.

Background: Addressing Nutritional Challenges

Maintaining a healthy diet can be difficult, especially for individuals who lack access to reliable nutritional information or struggle with identifying different fruits and vegetables. Our solution leverages image recognition technology to instantly identify food items and offer relevant nutritional details.

Existing Solutions and Their Limitations

While applications like MyFitnessPal and Lose It! offer calorie tracking features, they do not incorporate real-time image recognition for identifying fruits and vegetables.

Data Collection Approach

We plan to gather data on various fruits and vegetables, including images and corresponding nutritional information. Our sources will include publicly available datasets and reputable databases such as the USDA National Nutrient Database.

Our Solution: A Comprehensive Mobile App

Our proposed solution involves developing a mobile app that seamlessly integrates image recognition technology with a comprehensive nutritional database. Users can simply take a photo of any fruit or vegetable using their smartphone camera. The app's machine learning algorithms will accurately identify the item and provide detailed nutritional information, including calorie counts.

Proposed Tech Stack: Enhancing Fruit and Vegetable Recognition

Our project will utilize the following tech stack:

1. **Programming Language**: We will use **Python** for backend development and implementing machine learning models.
2. **Machine Learning Frameworks**: **TensorFlow** will be employed for image recognition tasks.
3. **Mobile Development**: We'll build a cross-platform mobile application using **React Native**.
4. **Database**: **Firebase** will serve as the storage solution for user data and nutritional information.

Project Evaluation Criteria: Accuracy and Reliability

The success of our project hinges on two key factors:

- **Accurate Identification**: The system must precisely identify fruits and vegetables.
- **Reliable Nutritional Information**: Users should receive dependable calorie counts and other relevant details.

Maintenance and Updates:

Regular maintenance and timely updates are crucial. Keeping the app current with the latest nutritional data ensures accurate results for users.

Project Objective: Empowering Informed Dietary Choices

Our goal is to empower users by providing instant access to accurate nutritional information for a wide variety of fruits and vegetables. The user-friendly interface and real-time image recognition capabilities will make our app a valuable tool for individuals seeking to improve their dietary habits and overall health.