Software Engineering Project Management : Personal Food Log App

Project Charter

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Abstract

Personal food log App is basically a food recognision and Calorie estimation Application. As per your demand this application will tell what food items a person is consuming on daily basis.

We have searched about all the existing methods and have decided to go with the best one with maximum accuracy. We have already gone through different applications like MealShap, Carbs & Cals and FoodCam.

We are aware about the loop-holes in all those existing food logging methods and we this application will be made in taking all those risks into consideration.

Some of the important features of this application will be the accuracy in food identification and calorie consumption.

Also, there are different modules for every task such as Image recognision, weight calculation and calorie consumption etc. which will make the applicatiob more organised for future improvements and updations.

Moreover, anyone can use this service and need not have dependencies installed on their systems.
Also, this project is completely open source and the entire code is available to the user as and when required. There is Complete developer's Documentation as well as User manual along with it that helps using it a lot easier.

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1.1 Introduction

Figure 1.1: Food logging

1.2 Summary

This project is related to food and calorie consumption which can be checked on daily basis. We have picked this project as there is a need of this application in today's world. Everyone is busy in their daily routines hence people of all age groups kept on eating unhealthy stuff. Thus, this application scope will be to hep people and will be beneficial to them for checking their day to day intake.
Talking about the set of people who will use the deliverables of this project: this application will be used by people of all ages and hence market wise this system will be having alot of users.

Project Overview

2.1 Project Summary

We are proposing an application: Personal Food Log App which will find the food consumption and calorie intake for every individual.
It will be a food logging system in which the user will click a picture of the plate full of food. The user just need to draw boundary circles around the particular food items and further the application will give results.

Our team will work and will assure that the application will be highly scalable and highly desirable. It will be made for both Android and IOS platforms.

Now a days, people are becoming more careful about their meals. They want to consume less calories in order to maintain their health. In todays world, Obesity has become a major problem in peoples life who are not concern about their meals. Obesity leads to various health problems like diabetes, hypertension, cancers, heart attack. Thus, in order to measure the calorie and nutrition facts of the food various calibration techniques has been invented. The most common method is by using the camera of a smart phone.

2.2 The Existing System

There are few existing systems which do the task like Traditional clinical systems, MealSnap, Smart Cooking Systems, FoodCam and Carbs & Cals and some other systems but they don't have few features which are here in this system. These system were not open source and free softwares. All exiting system suffers from at least one of the following loopholes.

2.2.1 Limitations of previous system

- Issue in finding exact weight of the item.
- No Independent modules such as Catalog.Also, Can't be easily configured for different purposes.
- Slowness and Accuracy issue and some more problems.
- Not portable

2.3 Goal

The Goal of this system is to take all the limitations into consideration and thus providing an application with high accuracy. Our team is working on finding best algorithms to implement this application without any slowness issue. Moreover, using this application people will get to know about their daily consumption and they can even maintain a balance of the calories they want to intake.

2.4 Objective of Project

The main objectives of this project is to :

1. Enhancing the operational efficiency of business resources.
2. Engaging design and interactive User Interface.

2.5 Scope

2.5.1 Project Scope

Below are the key features and functionality of this application:

1. The main functionality of this application is the calorie estimation.
2. We can also suggests them with dietary recommendations. (Optional)
3. A dashboard where the user can find all the necessary information like calorie consumption, section to upload image etc at one place.

2.5.2 Future Scope

Its a very useful application and as nowadays everyone prefers fast food and its leading to many health problems like obesity, diabetes and much more. So, this application will come into usage as it will help individuals to keep a record of calories consumption.
This will be a social app which will connect users with diet nutrient intake.

2.6 MileStone

In Milestone, we have highlighted different stages of the project. Its the initial level here and differ a little by the end of the project.
Possible Stages Analyzed is covered in below table:

Stages		
Stage	Project Milestone	Description
Stage 1	Requirement Analysis	AWS Server, Backup server & Compatible with both Android and IOS
Stage 2	Prototype	Implementing few features for the prototype coverage
Stage 3	Design	Designing the application into chunks using Unit and Integration Testing
Stage 4	Feedback	Final testing of the application and User feedback for improvement
Stage 5	Market Value	Application uploaded on Google play services

2.7 Technologies Used

1. Image Processing and Deep learning methods
2. Computational Intelligence for food recognision
3. Region Mining
4. Region Proposal Algorithm to extract feature of all regions

   The phone uses a personal software instrument to measure calorie and nutrition of the food. This software processes image to identify different food portions. This technique measures the volume of each portion and calculates its nutrition value by matching it with existing nutrition fact tables. Some of them are as follows:

   (a) Food Portion Volume Measurement.

   (b) Calorie and Nutrition Measurement & Partially Eaten Food

   Each of the above method has different formulae and technique to determine the nutrition value and calorie of the food. The accuracy of these methods varies too. These methods are very efficient and have a very good future scope. They can be very useful dieticians for the treatment of obesity or overweight people, although common people can also be benefit from these methods by controlling more closely their daily eating habits without worrying about overeating and weight gain. These methods are becoming better by covering more food types from a variety of cuisines around the world.

2.8 Project Cost Estimate and Source of Funding

Well, a main thing regarding profit calculation is money. Its obvious that you want to develop an app with a minimum cost without compromising on the quality. So, lets check what would be the cost of app development for this application. It is difficult to determine the cost of any app in the begiining phase only as it depends on many factors. The most significant factor is the nature of the app, whether its a simple one or complex. To give an idea we have worked upon the Budgeting very well and below are the estimates:

2.8.1 Human Resource

We are having skilled programmers with more than 5 years of experience who will be working on the logics and functionality of the application. The basic amount we and all the companies spend here is as follows: Charges of developers : from $35-$70 per hour As we would be needing experienced professionals it would be 60$ per hour for 5 developers at first.

Moreover,the look and feel can literally make or break an app. So, our front end developers will be working hard on the layout. As its vital that the more appealing the dashboard is, the more customers it will attract. SO, the members will be working on the UI/UX and customization features.
For selecting the servers to analyze images of users, there are many options to go with like AWS, Azure and Google Cloud which provides usage free for a year. After that the cost varies.

For checking cost:
Let's assume the minimum size is 1 kb and the maximum 5 mb. One more assuption that there are equal number of files of any size. E.g. number of files of 5kb, 2mb or 1382 kb are equal.

Now make sets of images such that 1 set contains all sizes from 1kb to 5mb only once. There will be 5120 (5x1024) files in each set whose tatal size would be 12802.5 mb or 12.5 gb. Dividing 5million by 5120, we get 976.5 which is to total number of sets.

So approximate size of 5 million photos is 976.5x12.5=12207 gb = 11.9TB So for 38 Million images the storage will be 92 TB. Further the application cost to go on Google play will be a one time registeration fee only. Also the maintenance cost will come into play which is mainly 15-20 % of the total project cost for a year. Let say if project cost is 20,000 CAD. Then maintenance for a year will be 15-20% of that amount.

Budgeting		
Requirement	Description	Cost (In CAD)
Server	Server cost will be mentioned here	2300CAD/92TB
Google Play Services	App uploading	$25 Registeration fee
Developers	Cost of developers	35-70$ per hour here.
Tesing	Human Effort	Alpha and Beta testing by our Support Management team (15-20$ per hour)
App Maintenance	After delieverables cost	15-20% of project amount.

2.9 Project Risks and Assumptions

2.9.1 Project Risks

Below are some of the risks which we think we should take care of at the beginning only. According to our analysis following are the risks involved:

1. A food item may have multiple recognisions. Like, sometimes its there in the wrapper and at other times may be in bowl. So, the algorithm we'll be using, will be efficient to differ.

2. Mostly images from internet and phone differs and in worst case it will get difficult to determine the image from dataset stored in cloud to find the calories consumption.

2.9.2 Assumptions

1. We are assuming the images dataset to be around 5 million. But later on for enhancing it more, we can modify the server memory and can get even more space.

2. Budget estimation for server is done according to Canada population as of now. We need to enhance the storage and change the server plan to expand the application in future.

Feasibility Study

3.1 Feasibility

This study is made to see if the project on completion will serve the purpose of the organization for the amount of work, effort and the time that spend on it. Feasibility study lets the developer foresee the future of the project and the usefulness.

A feasibility study is designed to provide an overview of the primary issues related to a business idea. The purpose is to identify any make or break issues that would prevent your business from being successful in the marketplace.

The objective of the feasibility study is to establish the reasons for developing the software that is acceptable to users, adaptable to change and conformable to established standards.

3.1.1 Technical Feasibility

This application is technically feasible as it is built up using various open source technologies and can run on any platform.

3.1.2 Economical Feasibility

All the resources are already available, it gives an indication that the application is economically possible for development. Moreover, more information regarding this section is covered below under budgeting.

Project Organization

4.1 Project Team Structure

This includes the steps to be followed to achieve the objective of the project during the project development.

As of now we are having a team of 19 professionals.

1. A development manager
2. Two analysts who have extensive experience in developing applications
3. One programmer/analyst who has extensive experience with this specific type of application
4. 8 programmers with five or more years of experience in developing applications
5. 7 programmers with less than five years of experience

   Our staff is highly skilled and qualified. We are a team of trained professionals having certifications in our fields.
   Therefore, every thing will be analyzed in detail.

4.2 Roles and Responsibilities

1. The project manager deals with managing the staff and governing the project process to get it completed before deadline. Manager will also be the point of contact for customer to get the insights about the project and to get to know about each and every step.
2. Developers will create the APIs and program the application to work on both Android and IOS platform.
3. Alpha and Beta Testing will also be done by the Application management team.