

PROBLEM STATEMENT :

Write a program to perform profile translation-based proactive adaptation using context management in smartphones. Objective of this assignment is to automatically generate user's profile according to the scenarios using machine learning approaches. System should allow to keep user's full profile in user domain resulting into centralizing or exchanging the profile information with increase in the consistency of profile information.

OBJECTIVE :

- To develop problem solving abilities for smart devices.
- To develop problem solving abilities for gamifications.
- To develop problem solving abilities of pervasiveness, embedded security and NLP.
- To study algorithmic examples in distributed, concurrent and parallel environments

THEORY :

Mobile technology and Internet is becoming an integral part of our daily life. Various transactions like shopping, ticket booking and banking transactions have been done on the fly. The technology like Smartphone adds portability for these activities. To manage information and applications on Smartphone, user must provide credentials or profiles to service provider with their details filled by logging onto different websites. To this purpose, user's profile resides in control of multiple service providers. Due to this, duplication of data occurs which will lead to a data inconsistency. To overcome these issues, this paper proposes Profile Translation based Proactive Adaptation using Context Management (PTPACM) in Smartphones which automatically generates user's profile according to the scenarios. Proposed system allows keeping user's full profile in user domain resulting into centralizing or exchanging the profile information with increase in the consistency of profile information.

Advances in mobile technologies and Internet access make users' life very comfortable and convenient to do the work very intelligently. Traditionally Internet uses client-server model. Client requests for some pages and server responds to client or client may give his information to server if required. This is a reactive model. To give more ease at the client end we can use concept of proactivity. Proactive service can be defined as giving response without explicit request. In proactive systems, user is provided with different suggestions according to the different situations. So proactivity means that the system pushes recommendations to the user when current situations seem appropriate.

PTPACM SYSTEM :

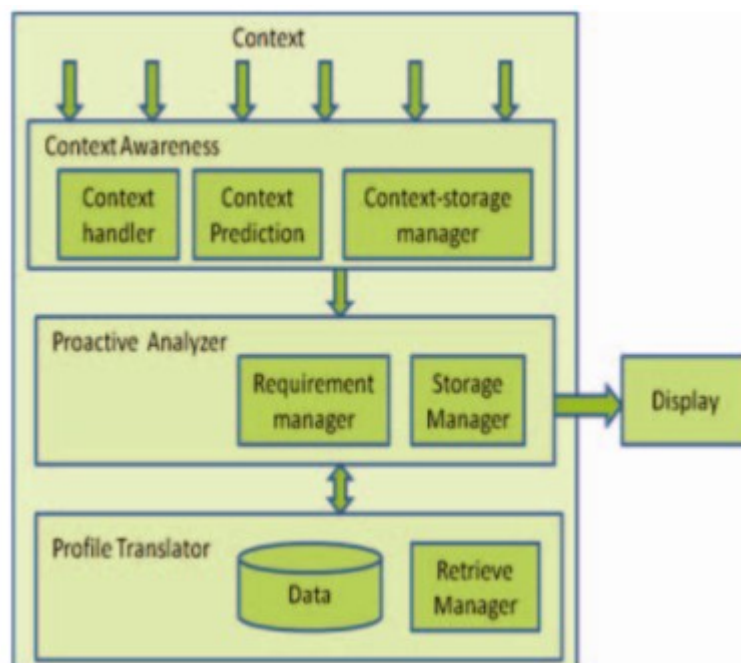
With the increasing use of web apps present in Smartphone it has become a tedious job for the users to provide the detailed profile to service provider. In current scenario the user's profile is maintained by service providers. When the particular website requires the information of user, whole profile is provided by the user. But this is actually not relevant because all the information is not needed. Accordingly, only the specified information of the usage should be provided. A system is created to avoid this which is android based and generates specific profile for specific website. As if the website relates to shopping, the profile would

contain only the name, postal address and contact or online reservation will require name, age etc. So according to the requirements, different profiles of user are generated. These will be the abstract views of actual profile of user. And these abstract views are provided to the service provider .

CONTEXT AWARENESS :

To recognize what profile is needed by service provider we use the concept of context awareness. Context in our terms can be referred as all the web apps in a Smartphone also all different kinds of websites that user visits through these Apps. Recognizing which website/webapp or which action of user needs generation of such profiles is referred as context awareness. Being context aware, the system recognizes need of an abstract views of profile which is provided proactively i.e. before user requests. When user tries to open an app which requires profile then this will be recognized and while that site loads, profile will be generated automatically. To generate these views proactively we should know the credentials needed for that website. Generating the profile according to the context determined is the foremost task of the application. The personalization of data is to be done at user side itself. The profile database is to be stored in the Smartphone. This is android based context aware proactive system which manages user's whole profile information and gives abstract view of profile according to the current context requirements .

ARCHITECTURE DIAGRAM :



ANDROID TOOLS USED :

1. android.webkit.WebView : A View that displays web pages. This class is the basis upon which you can roll your own web browser or simply display some online content within your Activity. It uses the WebKit rendering engine to display web pages and includes methods to navigate forward and backward through a history, zoom in and out, perform text.

searches and more.

2. <intent-filter> : Specifies the types of intents that an activity, service, or broadcast receiver can respond to. An intent filter declares the capabilities of its parent component — what an activity or service can do and what types of broadcasts a receiver can handle. It opens the component to receiving intents of the advertised type, while filtering out those that are not meaningful for the component. There are three Intent characteristics you can filter on: the *action*, *data*, and *categories*. For each of these characteristics you can provide multiple possible matching values.

ALGORITHM :

Let, $C \rightarrow \text{context}$
 $A \rightarrow \text{User's Action}$

Sense function will sense user's action and will return current context. This context is passed to the **ContextHandler**. ContextHandler will handle this context. Handling of context is done by using stored context information.

1. $C \rightarrow \text{Sense}(A)$: Users action are continuously sensed and returned as a context .
2. **ContextHandler** (C) : The context is passed to ContextHandler .
3. All the TextField tags are fetched from the website using a parser .
4. Based on the context the attributes are fetched from the users saved profile .
5. The fetched tags are compared with the attributes fetched from available profile .
6. Matched attributes are automatically filled .

INPUT :

User's profile including Name , Phone no. , Email , Username , Password .
WebPage requiring a sign up for further surfing or service access .

EXPECTED OUTPUT :

All the attributes in the saved profile are filled automatically without any human intervention .

MATHEMATICAL MODEL :

Let P be the solution perspective .

$P = \{ S , E , I , O , F \}$

$S = \{ \text{Initial state of the system consisting of a interactive form filling for profile generation .} \}$

I = Input of the system $\rightarrow \{ I1, I2 \}$

where I1 = { User's attributes based on the fields in the form . }

I2 = { A website requiring SignUp for further service access . }

O = Output of the system $\rightarrow \{ O1 \}$

where O1 = { Automatic Filling of fields from users Profile }

F = Functions used $\rightarrow \{ f1, f2, f3 \}$

where f1 = { **IntentFilter()** for filtering websites i.e Context Management }

f2 = { **WebView()** for viewing websites in Android Activity }

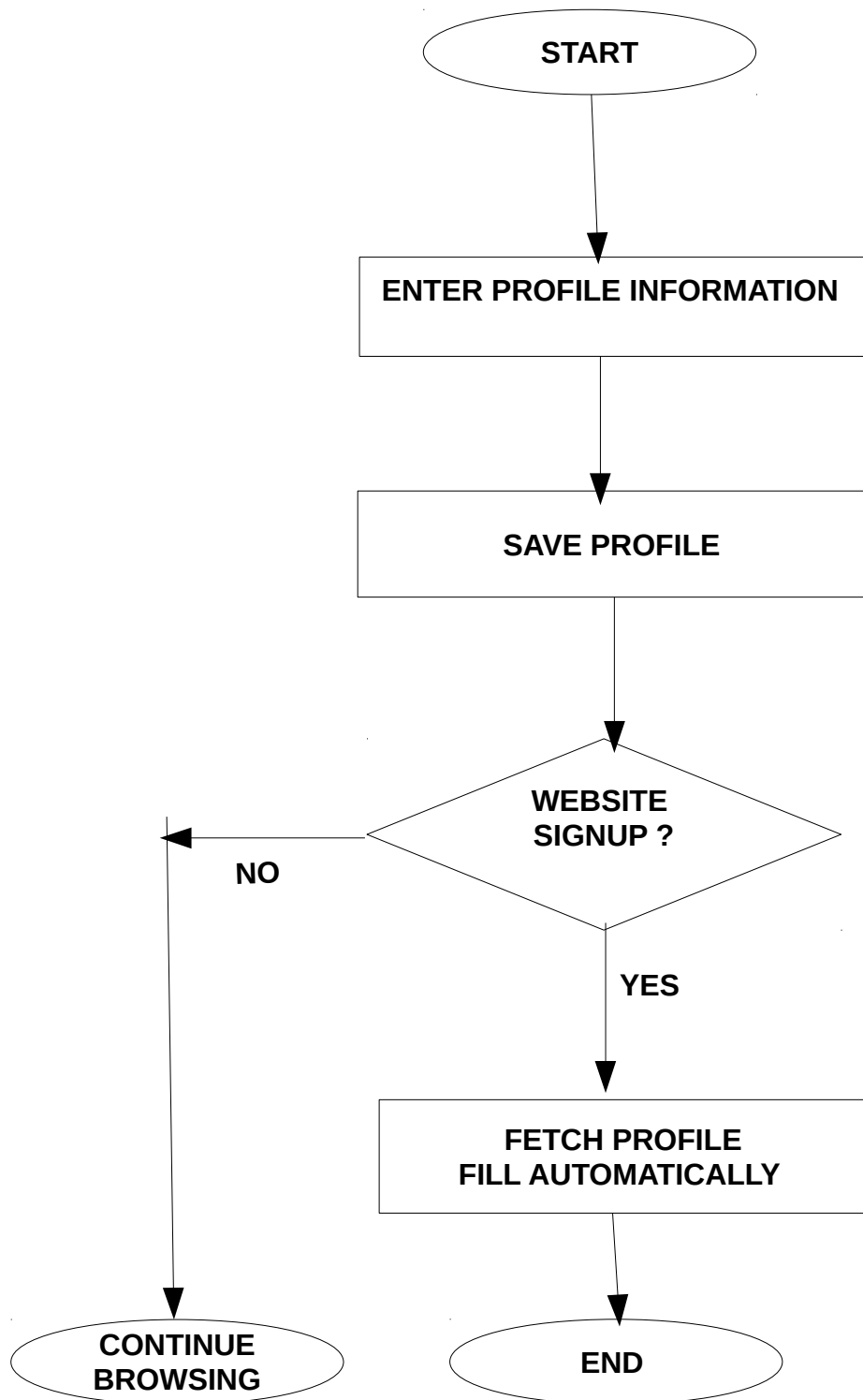
f3 = { **SharedPreferences()** for saving preferences }

E = End state of the system which fills all the available fields from user's profile into the WebPage .

TEST CASES :

TEST CASE	INPUT	EXPECTED OUTPUT	OUTPUT ACHIEVED	REMARKS
1	EMAIL SIGNUP	FILL NAME , PHONE AND EMAIL FILLED	NAME , PHONE, EMAIL AND PASSWORD SET	Correct
2	AMAZON SIGNUP	NAME AND EMAIL FILLED	NAME EMAIL FILLED	Correct

FLOWCHART :



CONCLUSION :

Hence we have successfully created an Android Application to read context of the user and providing proactivity in Smartphone, using profile translation architecture.

OUTCOMES ACHIEVED :

COURSE OUTCOME	ACHIEVED(√)
Problem solving abilities for smart devices.	√
Problem solving abilities for gamifications.	
Problem solving abilities of pervasiveness,embedded security and NLP.	√
To solve problems for multicore or distributed,concurrent/Parallel environments	