Socio-Connectzy: Socially connect people using mesh technology

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ABSTRACT

A wireless network is any type of computer network that uses wireless medium for connecting network nodes. Proposed system is an android application which forms a social network based on user's interest in simplified manner. There are two modules in proposed system. In first module it makes simple for user to find people with similar interest based on location using Global Positioning System(GPS). Proposed system also include personal assistant to assist user with suggestions that are related to their interest and their location. In second module Users with similar interest can communicate in a network even without Internet access by forming mesh network. In proposed system mesh network is formed using wireless technology such as Wi-Fi, WP2P And Bluetooth.

Keyword : - *Wireless Communication, Network, Router, Mesh Networking.*

1. INTRODUCTION

Today the world is technologically advanced in terms of communication. Communication has become very much easier and cheaper. Social networking has made communication easy where people across the world can communicate with each other. Using social networking sites people are able to form community where there are people with same interest , background , career and they can share their ideas or thoughts. Forming a community is challenging task, as well as finding people with same interest in the same locality. Using dynamic interest tracking algorithm we reduce efforts to form community where people with similar interest are tracked and connected based on their location. This algorithm works with internet, it also works offline with the help of mesh network.

1.1 Software Requirement

1) Back End : SQLite DataBase
   SQLite is an opensource database. It stores data in text format on android device. Android has built in implementation for SQLite. All relational database functions are supported by SQLite , to access the data it is mandatory to create connections using JDBC , ODBC.

2) Front end :-
   Android 4.0 , JAVA JDK 1.8.

For developing this system we will required and Eclipse IDE and implementation language will be Java. For backend we are going to use Python or shell script.
Above mention software are easily available on internet. So that we can get them easily.

1.1 Hardware Requirement

1) RAM : 512 MB

2) Processor Speed : 500-800 MHZ
3) Operating System : Android
4) Minimum OS version : 4.0
5) Storage : 500MB

For the implementation we need a android device having minimum Random Access Memory of 512 MB upto the latest RAM memory. Its processor speed required is minimum of 500-800 MHZ. And the android operating system installed in device with minimum version 4.0 up to latest android version.

1.2 PROBLEM STATEMENT

Develop a system that forms mesh network where people with similar interest are connected using wireless mediums(Wi-Fi) based on their interest and location using `Global Positioning System (GPS).

2. SYSTEM ARCHITECTURE

Initially user needs to register. After user registration profile of user is created. Profile is synced with the backend server. Whenever user performs some action or task it is been tracked by the assistant and according to interest is tracked and profile is updated. Whenever the profile is updated it is synced with the server. When user is connected to internet, personal assistant assist the user and provide suggestions, users profile is matched based on their interest and location and as per to it suggestions are displayed.

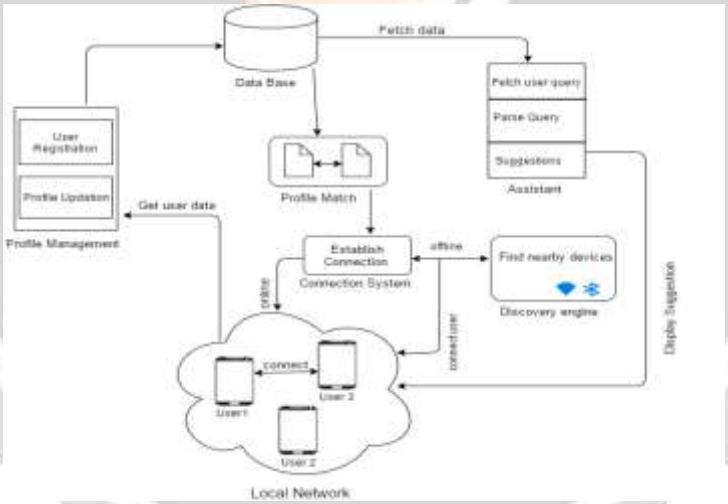

Chart -1: System Architecture

Discovery engine is for finding nearby devices based on distance in mesh network. Bluetooth or Wi-Fi is used while forming mesh network. User can communicate even without internet access in mesh network. Job of discovery engine is to find nearby devices and connect. Nearby devices are formed on proximity distance.

2.1 MATHEMATICAL MODEL

- (Q,P,δ,q0,F) consisting of Q is a finite set of states,
- ∑ is a finite set of input symbols called the alphabet,
- δ is a transition function, q0 is initial state,
- F is Final state
- Q=s1,s2,s3,s4 is a set of state

- P=I0,I1,I2,...,In, is the set of users files
- q0=s1, is the initial state
- F=s4 is the final state
- s1= {u1,u2,u3……u_n}. , number of users
  u = {Name, location, birth date, mail id, interest} //user data
  q_r = user query
  T = t_1 , t_2 , t_3 …… t_n , set of tokens
- δ(s1,Update Profile (Sync))
  old data + new data
- δ(s2,Query Parser)

  $$t = \frac{q_r}{n}$$

  n = number of keywords in query.

- δ(s3,Tracking Similar interest users)

  $$\text{Similarity} = \frac{user1 \cdot user2}{|user1| \cdot |user2|} = \frac{\sum(W_1 \cdot U_1)}{\sqrt{\sum W_1^2} \cdot \sqrt{U_1^2}}$$

- δ(s4,Connect Users)
  $W_1 \in U_1$
- Success Conditions: Connect users with similar
- interest Failure Conditions: Unable to find and connect similar interest users

2.2 INCREMENTAL MODEL

Incremental Model is one of method use for software development. In incremental model the software product is developed or build, implemented and tested in incremental order , such that time certain changes are made in the product until finished. Software product that has been developed is also maintained in this model. This model is used when the requirements keep on evolving. The changes are also made on the basis of feedback. Incremental model follows iterative methodology.

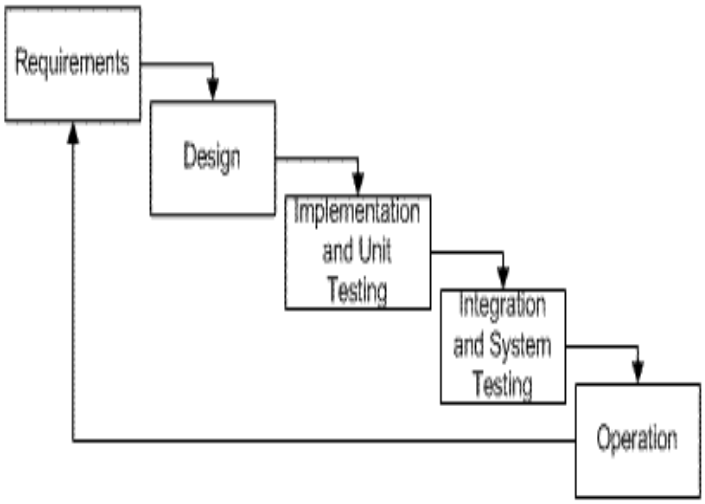

Chart -2: Incremental Model

3. ALGORITHM TO BE USED

Dynamic Interest tracking algorithm is used in which keywords are searched from users browsing history and GPS locations. Using cosine similarity function users profile is matched.

- $Node_A$ - Node in ad-hoc social network
- F_A - Forest maintained by $Node_A$
- L_A - List of GPS Locations of $Node_A$
- $L_A(t)$ - GPS Location of $Node_A$ at time t
- $List_A(L_A(t))$ - Hierarchical data structure of keywords for location
- $L_A(t)$ K_i – i^{th} Keyword
- IK_i - Interest level of i^{th} Keyword
- N - Total no of levels
- m - Number of keywords at j^{th} level
- Trigger: $Node_A$ receives Ki from search and browsing url's and receives LA(t) \\
- If ($L_A(t)$ exists in F_A) then
  return $List_A$ ($L_A(t)$) from F_A
  updateInterests()
  else
  empty tree $List_A$ ($L_A(t)$) added to FA
  return $List_A$ ($L_A(t)$)
  update Interests()

end if
Function:
updateInterests()
scan $List_A$ ($L_A(t)$)
if (K_i found in scanning) then
IK_i ++
else
insert K_i into $List_A$ ($L_A(t)$)
$iK_i = 0$
end if

3.1 ADVANTAGES

1. Ease in making new contacts, friends.
2. Communication can also be done even without internet access.
3. Personal assistant to assist user .
4.People with similar interest are tracked and connected.

4. CONCLUSIONS

We propose a system people interest tracking algorithm is used to track down users interest and connect them based on their location.

Mesh networking is also implemented where users can communicate without internet access.

5. ACKNOWLEDGEMENT

We express our sincere thanks to Head of Department of Computer Engineering for her kind co-operation. We express our sincere thanks to Prof. Kushal Khairnar.

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