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LOCATION AND CONTENT SPECIFIC COMPACT QUERY MOBILE SEARCH ENGINE

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ABSTRACT

The primary issue in mobile search is that the interactions among the users and search engines are constrained by the little screen of the cell phones. To give more pertinent results to the users, search engines must able to engender user's profile, including interest and personalizing the search results according to the user profiles. The proposed personalized mobile search engine is an innovative approach to personalize search query and corresponding search results The Proposed framework takes the assistance of Google's GPS to identify user current location and location-content mining concept to personalize the search query as per query type. And also makes use of the user profile & user interest to alter the user query close to user personal approach to find anything on the world. Proposed system uses Google, yahoo and Bing search engine's API's to probe out the personalized query which returns search results. The returned search results are again rearranged in different categories as per earlier click through history of the user. It helps user to get virtually close results from three different search engines. we present our approach to personalizing web search on a mobile device The proposed system perverse the user privacy, which are designated as two privacy parameter true or false value. The Proposed system provided the city travel/tour guide system which was additionally personalized. The proposed system will gather the information from location predicated query that will be identified by location - content mining concept.

KEYWORDS: mobile search engine, personalization, privacy setting, click through data.

INTRODUCTION

In the current trends, internet search engines have become an essential part of our lives. They have enabled large number of presence of participants and collaboration by thousands of millions of user/people over the world. Currently People are able to find all sorts of information instantaneously from anywhere. Search engines have also come to be comprises large number web sites from different background and category. The excessively difficult nature of the problem of understanding user intention and identical it with the worlds acquired knowledge stored on the World Wide Web has fascinated large-scale research and development work from the academy as well as the industry.

The primary problem in mobile searching is that the communication between the user and search engines are very limited due to the small screen of the mobile system. As increase in Internet users and accessible web pages, it introduces many new tasks for Web search. When the same search query is submitted by different users, common search engine returns the same result, disregards of who submitted the query. It is becoming increasingly difficult for users to obtain information those are appropriate to their requirement. In the current web page /document, as the amount of available documentary information going to overwhelm, its demand for personalized technique to get access to document increases. The Personalized system gives the solution to this problem by creating, handling, presenting reform information for each user. This reformation may extract out unimportant Information and/or find more document information about user interested. The users of mobile try to give shorter to search engine, hence more uncertain queries compare with their web search. To give more relative results to the users, search engines must able to create user's profile, including interests and personalize the results according to the user profiles. User

interest personalization is based on the concept preferences .mobile search engine with user personalized that collects the user's preferences in the form of concepts by analyzing their click-through data. As location-based information is very important in mobile search, so search engine collect user's preferences in the form of concepts by diving content concept and location concept. Location information's are supplement to the location concept.

RELATED WORK

The primary problem in mobile searching is that the communication between the user and search engines are very limited due to the small screen of the mobile system. As a search result, users of mobile try to give shorter, hence more uncertain queries compare with their web search. To give more relative results to the users, search engines must able to create user's profile, including interests and personalize the results according to the user profiles. The technical approach to obtaining a user's interest in Personalization by examining the click through data. Many existing personalized web search systems [2], [3], [5], [9] primarily based click through information to see user's preferences. Joachim's [3] proposed to mine document preferences from click through data.Later, Ng et al. [9] proposed to combine both a spying technique and a novel voting procedure to find user preferences. Search queries can be categorized as content (i.e., non-geo) or location (i.e., geo) queries it was discovered that several queries were location queries are focusing on location information.In [6], Gan et al. developed a classifier to relegate geo and non-geo queries it absolutely was found that a major variety of queries were location queries that specialize in location information so as to handle the queries that specialize in location data, variety of location-based search systems designed for location queries have been proposed.Yokoji [7] proposed a location-related search system for web documents. Location information was derived from the web documents, which was converted into a combination of latitude-longitude points. When a user submits a query together with a latitude-longitude pair, the system engenders a search circle centred at the designated latitude-longitude pair and retrieves documents containing location information within the search circle.More recently, Li et al. [3] proposed a probabilistic topic based framework for location- sensitive domain information retrieval. Rather than modeling locations in latitude-longitude pairs, the model assume that users can be fascinated with a set of location sensitive topics. It apperceives the geographical influence distributions of topics, and models it utilizing probabilistic Gaussian Process classifiers.All above existent personalized search systems are based on click through data to find user's preferences and all existing location-based search systems, users needs to manually define their location preferences (with latitude-longitude point), or to manually prepare a set of location sensitive topic and they do not address the issues of privacy preservation.

THE ARCHITECTURE

Following Figure 1.1 shows the proposed architecture. From introduction and related survey, in which several techniques are being developed to address various problems faced in personalized search engine but even after various proposed methods the problem of privacy was not resolved and therefore there was a need of designing compact search engine which gives most relevent search result and thereby overcoming the drawbacks of exisitng systems.Therefore to address various problems proposed system was developed in which instead of providing bulk search data, proposed application aims at displays only top rated results.Thus, personalized search system application is designed to learn and develop user;s profile, content or location based approach of user by analysing search queries submitted by user, GPS location and clickthrough history.

Proposed system consists of following major activities:

1. Reforming user search query and re-ranking the search results at server:

User can enter query in a search box at client side. Along with search query, application at client side will post feature vectors of user's preferences which are as per filtered ontologies. Filtered ontolgies are configured according to user's privacy settings.At server side, query submitted by user was reformed according to location and content preferences of user and his/her previous search queries. Server obtains search result set for reformed query from backend search engine. The search result set from different backend search engines are merged together and re-ranked according to training performed at server side. The training was performed to find out weight vectors according to users previous Click through data collected and ontology updates. Server extracts ontology from search result set and accordingly updates client's ontology database. Finally the re-ranked search query result set was presented to client for the personalization of future queries.

2. Click through collection at client:

Whenever user clicks on any one of link from search result set presented to user, the Click through was generated. The Click through data was stored at server's Click through database. The Click through data for clicked link includes content and location concepts, the total number of clicks, click order and link information of that particular

clicked link.The Click through data was stored on the personalized search system of server and hence server does not come to know anything about total links that the user has clicked on. This allows preventing user privacy up to certain degree. The proposed system protects user privacy in certain degree. The amount of personal information exposed out of user's mobile devices is controlled. Search engine filters the result set according to the user's privacy level setting, that are specified with two privacy parameters, true and false. The privacy preserving technique aims at filtering concepts that are too specific. If the user is concerned with his/her own privacy, the privacy parameter can be set to true so that only limited personal information will be included in the feature vectors and passed along to the server for the personalization. On the other hand, if a user wants more exact results according to user preferences; the privacy parameter can be set to false so that the server can use the full feature vectors to maximize the personalization effect. At client side application gives a choice to user to set his/her privacy parameters according to self concern. So only limited information which was allowed by user will be included in feature vector and sent to personalized system server for personalization. Now it's up to user to get more accurate personalization result by allowing privacy parameters with full feature vectors to sent to the server or preserve high secure privacy by disallowing privacy parameters and get result personalized accordingly.

3. User Interest Profiling:
To make search engine more personalized, proposed system includes interests and preferences of a user in search query. The system uses "concepts" to model the interests and preferences along with user location. Hence, a concept was first classified according to user interests and preferences and then into two different types, content concept and location concept. The concepts are modelled as ontologies, in order to capture the relationships between the concepts.In Proposed system, we adopt ontologies to model the concept space because they not only can represent concepts but also capture the relationships between concepts.

4. User Preferences Extraction and Privacy Preservation:
Proposed system will implement ontologies concept and Click through to learn user's preferences. As the concepts and Click through are collected from previous search activities of user, these are useful for understanding user's preferences and re-ranking of search result set. The past search preferences, information of a set of feature vectors, are submitted to the server along with current search query of user. But while transmitting all these data to server, user was free to transfer only those amounts of data which was out of privacy setting boundary. Hence, only limited data, data permitted by user was exposed to server and privacy of user was preserved.A preference mining algorithm was implemented to learn user behavior models from preferences extracted from Click through data.The algorithm assumes that user can click on only those links which are of his/her interest. It treats the clicked links as positive samples while non clicked documents are traded as ignored links. As stated earlier preference algorithm is useful in understanding user's behaviors which helps in re-ranking of current search result set.
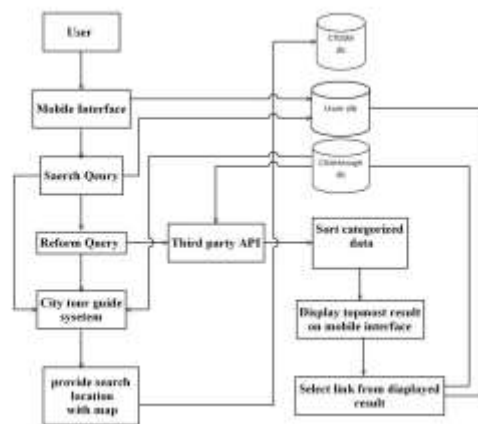

Figure 1 Overall System Architecture

5. Personalized Ranking Functions:
Server will implement re-ranking function to re-rank search result set according to user's content and location preferences. Ranking is employed to learn a personalized ranking function for rank adaptation of the search results. Server will extract content concepts and location concepts for a submitted query by user. Each extracted document is

nothing but a feature vector; it can be as a point in the feature vector.User has the mobile interface of application. He/she enters a search query here. The entered query is sent to server side along with location and content concept. Also, user's previous click through data was included. The entered query was reformed at server side which was submitted to third party API to get search result set. The search result set was sorted out and re-ranked according to feature value of users click through data. The topmost result was displayed to user on his mobile interface. Also, users Click through data and location concept query were submitted to CTGS module to build CTGS. User will click on a link displayed on mobile interface. The clicked

Selected link information was sent to update Click through database and user database.

6. City Tour Guide System [CTGS]:

As mentioned in problem statement the proposed system aims at providing user personalized search engine which helps in giving most relevant re-ranked and top rated result set on each search request with additional feature of providing them city tour guide system which play a very important role in our proposed system.City tour guide system is an application which helps user to find his interested place easily by maintaining user personalized location history for making future search request very efficiently.

## IMPLEMENTATION AND EXPERIMENTAL SETUP

In the experimental phase of the system first check the profile information given by the user are correct or not. The first step on server side for user is to register user on system. Then after registered user has to login. server will check user information in user database and either validate user or give a message of incorrect user. On successful login, user submit search query. System will check query for content and/or location based concept. After processing of query for re structured search result set, result was displayed on user interface. Now system will check for clicks on search result and generate Click through data for each click. Also, check whether system will update CTGS database of user for each location based query. On location finder request from user, CTGS will check for location information of user in CTGS database and return respected information to user.

GUI Designs

The result of the system consists of the following screen-shots. The User must register with an app, following Screenshot 1 shows registration page. User has to fill required information in correct format then click on register button. It will show message "User profile created successfully go for login". User can also reset information by clicking on Reset button.

Screenshot 1 *Registration Page*

After registration user can log into the app as shown in following Screenshot 2. User has to enter username and password , on clicking on log in button , username and password send to server ,if username and password is correct then it will navigates to search page as shown Screenshot 3.
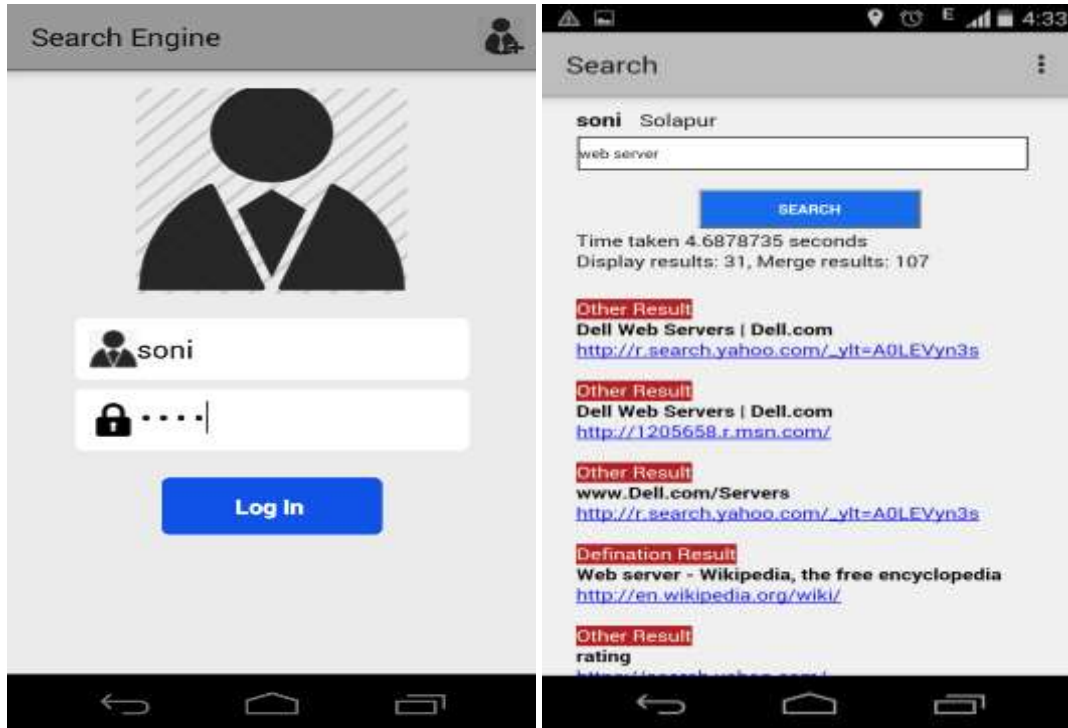
**Screenshot 2** *login page*   **Screenshot 3** *Search Page*

Upon log into app. User can able to update his/her profile shown in Screenshot 4. In Screenshot 4 user has to fill required information in correct format then click on update button. Filled information send to server, sever update profile of user .it will show message "Profile has been updated successfully".

To control the amount of personal information exposed out of user's mobile devices, server filters the search result set according to the user's privacy level setting, which are specified with two privacy parameters, true and false as shown in Screenshot 5 privacy setting page. If the user is concerned with his/her own privacy, the privacy level can be set to false so that only limited personal information will be included in the feature vectors and passed along to the server for the personalization. On the other hand, if a user wants more accurate results according to user preferences, the privacy level can be set to true so that the server can use the full feature vectors to maximize the personalization effect. User profile information and privacy setting information of user will be used while modifying a query.

In Screenshot 4 the search queries submitted by user in search_textbox send to our server after clicking on search button. At server side, first it Extract location and content concepts i.e type of query gets identified and then it is modified based upon previous history of search queries and user profile If query type was location, then query was also saved which was referred in CTGS application On modification of queries, query was submitted to three different search engines, yahoo, google and bing by our server The above mentioned search engines returned the bulk result of search query in form of html web page The returned result was extracted by our server Result merge by avoiding duplicate results and cached results. The re ranked results was displayed to user,as shown in Screenshot 4 .Upon re ranking, category of result was found from database, if it has no category then it displayed under "Other" category otherwise user can add particular result into category by writing category name in textbox then click on plus button as shown in Screenshot 6. When user clicked on any result link, feedback session was generated in which click order, total clicks information was collected. This information was used for re ranking of result.
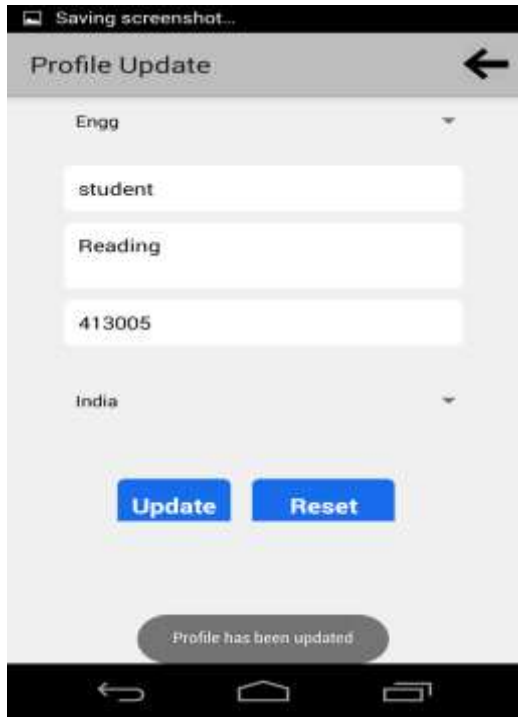
Screenshot 4 Profile Update page
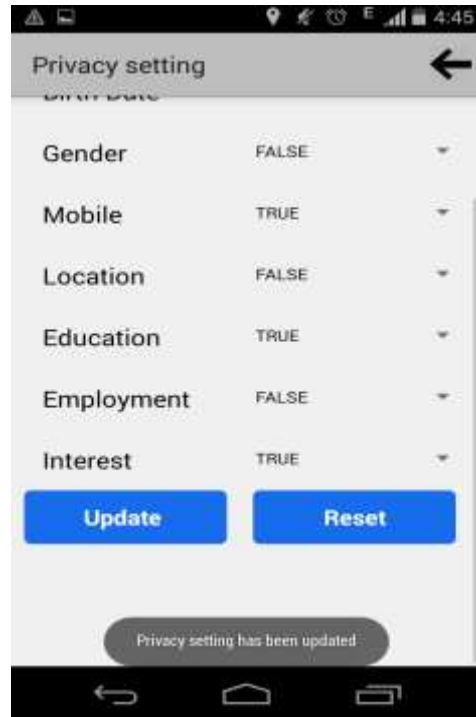
*Screenshot 5 Privacy Setting Page*
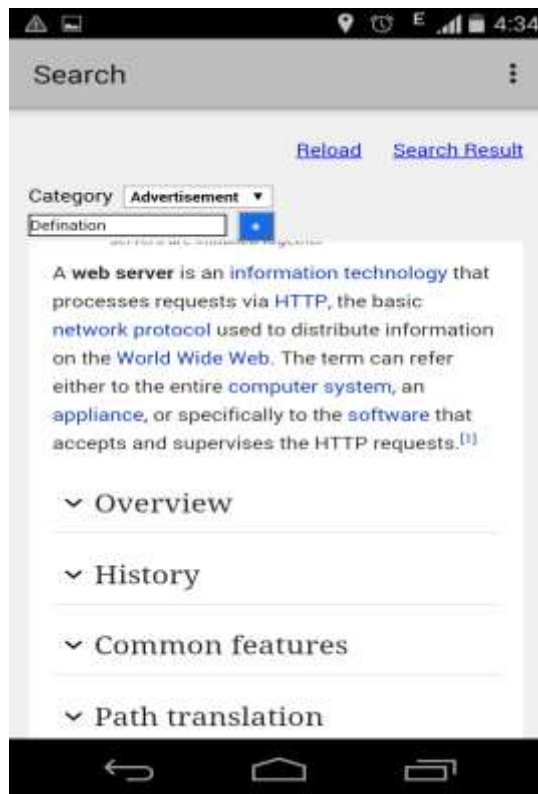
Screenshot 6 *Search Result Page*

If user want to search location based query, user will open map page by clicking on map menu option. It will open map page as shown in right side of Screenshot 7. It will display user current location was displayed on map and also address was displayed at top and also, on map, different locations visited by user are displayed.
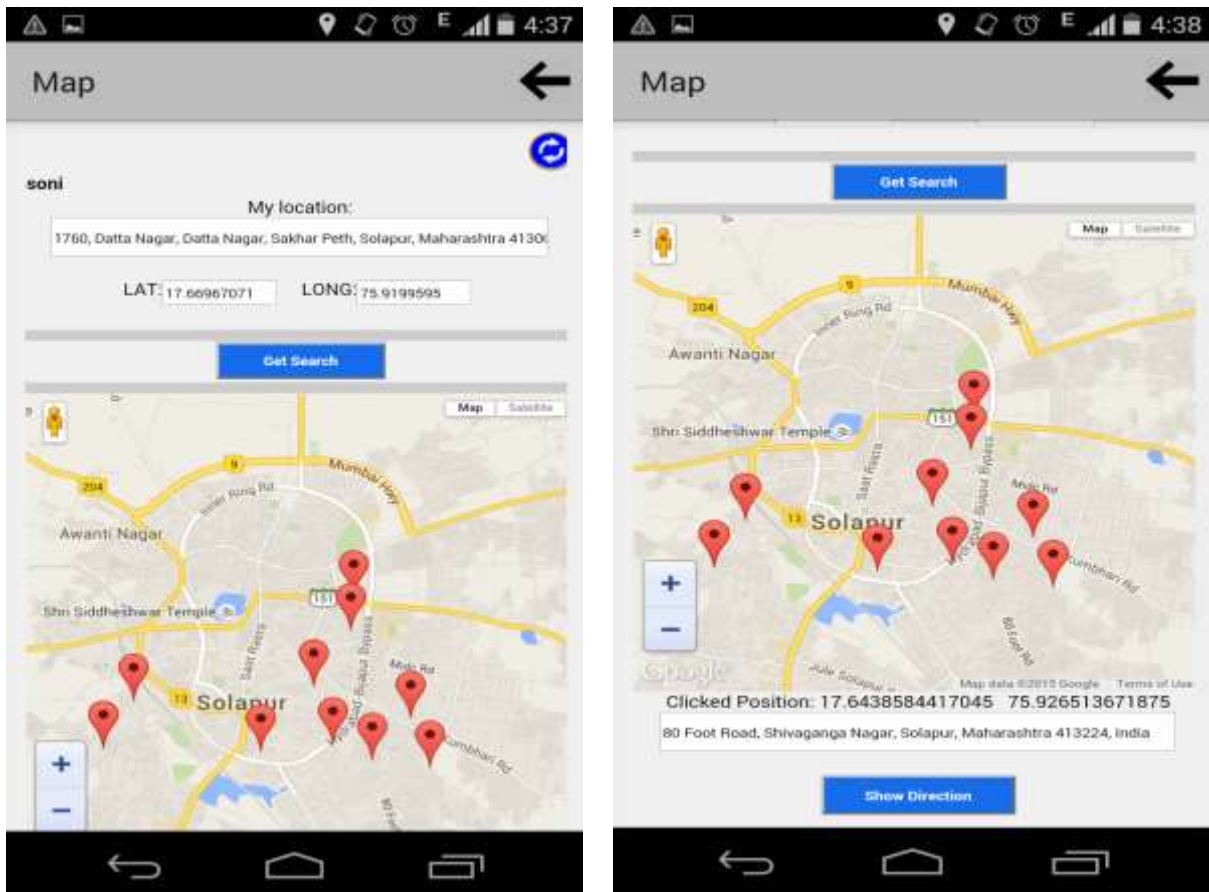
Screenshot 7 Map page

If user wants to start travel guide, user can simply click on map to get destination then, on clicking "show direction" button as shown in left side of Screenshot 7 . It will navigate to new window as shown in Screenshot 8 at top of page, both such that, user current location and destination location was displayed. Just click on "show direction" which will display a way on map and details of routes at bottom of map shown on right of Screenshot 8.
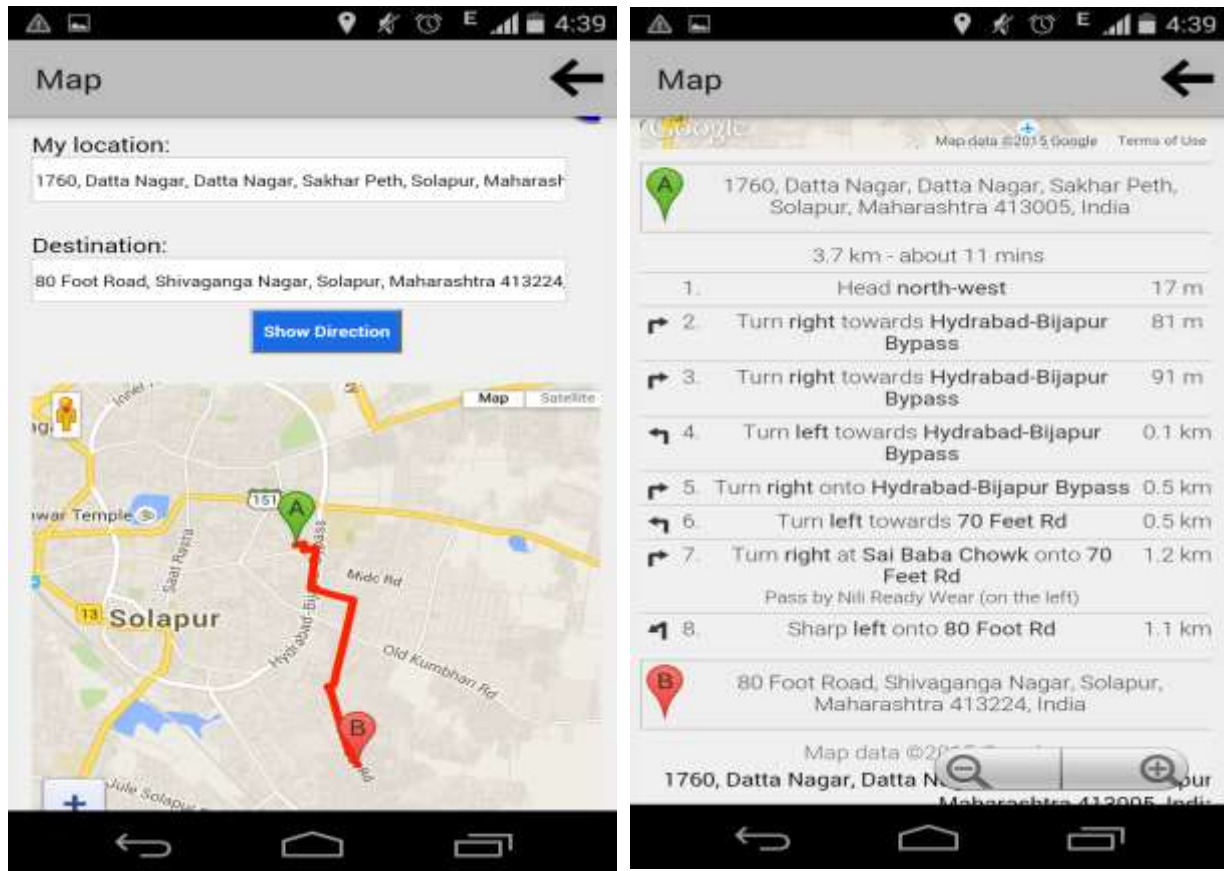
Screenshot 8 *Direction Page*

CONCLUSION

The proposed personalized mobile search engine is an innovative approach for personalize search query and corresponding search results. It analyzes both content and location concepts for user profiling and to personalize search query and corresponding search result for a user. The proposed system takes the help of Google's GPS service to detect user location and location-content mining concept to personalize the search query as per query type. The Proposed system also provides the city travel/tour guide system which was also personalized. It will collect the information from location based query which will be identified by location-content mining concept.

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