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Mobile mechanic using augmented reality detection

N.Jayanthi[1], [2]S.Keerthana, [3]P.Gowdham, [4]P.Geetha Devi
Assistant Professo[1], UG Students[2,3,4]
Department of Computer Science and Engineering
Velalar College of Engineering and Technology
njayanthi1979@gmail.com, keerthanavelu96@gmail.com,
gowdhamorton@gmail.com, karpagageetha14@gmail.com

ABSTRACT: **The Mobile Mechanic system focuses on helping the travelers and tourists while they prefer their own vehicles, inevitable situations like car breakdown and malfunctions of mechanical systems will make the journey humiliated by making peoples feel helpless and stressful. In this paper, we present a request identification system using android application that senses the location via Location Provider. An Augmented Reality will provide the information of nearby sheds depending upon the orientation of the mobile device. Upon selecting one of the mechanic shed, an automated call to that particular shed is made by the system (Consists of Location and distance information) of the area. This application will be developed in Android studio with SQLite database as backend. Uses Dijkstra's algorithm to find nearer mechanic shop using current location identification as destination to the mechanic.**

Keywords: Android application, server, mobile phones, android tablets, notifications, push messages, database, GPS.

I INTRODUCTION

Network tends to be the backbone of all the technologies. "Mobile Mechanic Service - providing nearest service centers or mechanic locations to the user using an android application".It is designed to ease the access of the nearest mechanic sheds who have already registered with their mobile mechanic app .If one of the innovative features of this app is that it can get the current location of the user and sends to the particular mechanic headand get the exact position of the user anywhere and at anytime. All vehicle user can make use of such app to locate and communicate with the service centers . The proposed system can be used by all automobile users. Hence, from now on we use mobile mechanic services to illustrate the system.

The entire process of providing service is as follows:

1. A customer first need to sign up for this application and then can request for a service.
2. The mechanic head finds a free mechanic and assigns a new task to him.
3. The mechanic goes to the particular address in which the requested user is waiting for the service.
4. The mechanic calls the centre and informs the head of his presence in the address and start of providing the service. After his service completion his feedback will be given by the customer.
5. The operator adds the mechanic to the queue of free mechanics for further tasks.

II LITERATURE REVIEW

The survey regarding this mobile mechanic application includes information gathering

from various references. These references include some of the mechanic centers, various related web sites and similar projects developed previously. IEEE papers are used for nullify the disadvantages of concepts and algorithms included in previous project. e.gE-Mechanic Service using Android Programming and Messaging Service.

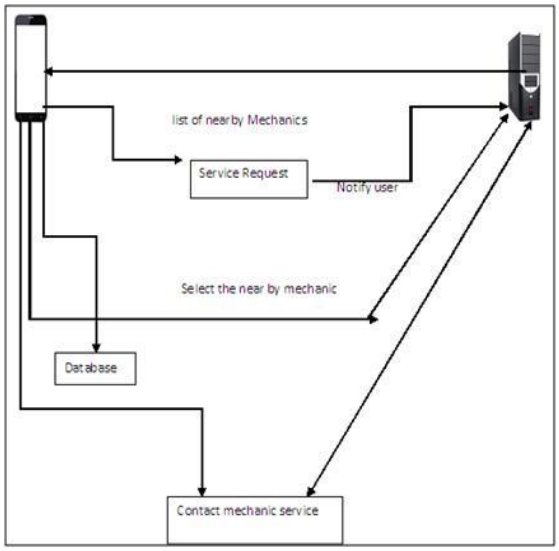
Dijkstra's Algorithm is used for finding shortest pathamong different mechanic shed around the particular area. This app consists of features like giving user flexibility, locating and mapping of service centers, etc. By the above references the extra features are made with the proposed system.Extra features include-

- Navigation to the service center and mechanic sheds using Location Provider services.
- Using Augmented reality concept the mechanic sheds are displayed with their distance.
- Nearby mechanic shops are displayed with big dots and which is far apart are displayed with small dots.

III PROPOSED SYSTEM

Purpose: The Mobile Mechanic system focuses on helping the travellers and tourists while they prefer their own vehicles, inevitable situations like car breakdown and malfunctions of mechanical systems will make the journey humiliated by making peoples feel helpless and stressful. There are some disadvantages of the existing service centre finding location. These disadvantages are recovered by the E-mechanic servicing by using augmented reality mechanism. Previously people could not location of the mechanic service centre conveniently in case of their vehicle break-down or any other grievances. Using this mechanism the nearby mechanic shops are displayed with big dots and which is far apart are displayed with small dots.This system will help them by providing instant mechanic help on such situations (eg Google Location Provider, Google Maps) will identify the location in which the request is originated from, following that a service will be Provided on that intended locations. It is useful for Ministry of Road Transport and Highways.

Architecture:



As it was previously stated, all of the mechanics are provided with a hand-held device which supports 3G SIM card and has been equipped with GPS chip-set.

The system we intend to design should consist of two major modules:

1) Server-side application
2) Mobile application

A server-side application is to get the requests and processes it. while it detects the location of the client, it gets the mobile sheds and service centers from the Google places API(Application Programming Interface) around that locality and sends the response to the respective client . If the user responds with selection of mechanic shed ,the server will push a message (mobile number and active service handlers) to the client's mobile screen.

Mobile application gets the information and data sent from the database of server which is location and contact numbers will be displayed in the screen . An interactive user-interface provides such facilities through

Android layout which is designed using .xml formats. While the client gets mechanic shed details ,it will help the to invoke the service. After finishing the service ,the mechanic will be added to the free queue of mechanics in the shed. Lastly the system prompts for feedback from the user about the service, which helps to list when the next user invokes service from that locality

Augmented Reality:
Augmented Reality type Android Mobile Application displaying location in 3 ways:

1. AR view
2. Map and
3. List

Augmented Reality brings virtual experience to user which makes its different from other kinds of User-Interface,which makes it unique from other kinds of UI provided through .XML format. Augmented Reality is implemented in this application through vuforia in Android SDK since it provides API for interaction with the user leveraging existing tools is considerably a better option.

Augmented Reality is about implementing concepts of real world with virtual environment. On Android devices, this simply means escalating what you see through Android camera .

Scope of Project: In this paper, we present a request identification system using android application that senses the location via Location Provider. On the perspective of wanderers on acquiring the help in unavoidable Situations. Most of the incidents indicate that they need instant service Providers from the Mechanic shopsfollowing the request call from the request issuers. An Augmented Reality will provide the information of nearby sheds depending upon the orientation of the mobile device. Upon selecting one of the mechanic shed, an automated call to that particular shed is made by the system (Consists of Location and distance information) of the area. The head node (Administrator) will split the requests to the service nodes in that shed, Location of the request claimer will get shared to that service node by Head node. Thus the service provider will help the request issuer on reaching the intended spot. Multiple requests will be stored on the queue of the head node depending upon the reviews of users, These reviews will play an important role in lists of nearby sheds and in ordering them when the distance is same for two or more sheds.This application is designed to help in unavoidable Situations of vehicles and is used to provide services of all types of vehicles, by mechanics at various places, ie,anywhere and at anytime.The above proposed system is ease to implement considering the available technology infrastructure and its design implementation. The proposed models are simple,ease of use, secure and scalable. Augmented Reality (AR) technique is implemented to provide better user experience and to grab the attention of the clients, which in turn is a newly added feature of our application .Mobile mechanic using Augmented Reality system can be used to reduce human efforts.

IV FEASIBILITY STUDY

The main objectives of the feasibility study is to find out that project can be done and can be applied for social relevance. Feasibility Study is done to check whether the proposed Mobile Mechanic system will be able to work within available resources (hardware, software, other equipment).It is also used to predict whether there is enough financial budget to design and implement the proposed system, and whether the proposed system will be applied as per the expectation of the user or not..

Technical Feasibility: Technical feasibility is necessary to check whether the system is feasible or not for the native application. This application requires a goodand stable Internet connection. The technologies which can help out to develop such an application are Java,

MySQL and Android Environment. The supporting tools for above technologies are Android Studio, MySQL and Android devices. Even if all the above technologies are available, Eventhough few of above require training for little amount of time, but it is feasible enough to cope-up with the time allotted for the project. This application gains more efficiency while using it for few times, which helps to understand users way of thinking. So this application has a technically feasible nature.

Operational Feasibility: Once the system will be deployed whether the proposed application will work in the native environment of the Client? Or will it be User-Friendly? Or will it adjust according to Operating System and other resources of the Client? Etc., questions are needed to be checked. On behalf of the application systems should hold good GUI facilities which will attract and interact with the user to use the system. The applications are designed based on the latest versions of Android SDK.

Economic Feasibility: Development costs: Own riskand Care is taken by us to make sure that our application is implemented using all available technologies and resources.

Operational costs: Our system is developed in such a way that the application should be understood by all the users and it also should be user friendly. Maintenance and support costs: The user of this application only requires a good and stable network connection (if possible then 4G internet connection) to work with the application.

Time Feasibility: The Proposed Mobile Mechanic System is a mobile application so it will take some duration of time to satisfy the constraints of the system (Application). The duration that is allotted to design the system is quite feasible with respect to time.

V MODULE DESCRIPTION

Authentication Module: Authentication module will provide security for the handheld devices with a unique device ID and password only for the user who has been registered to the server. We also provide each user with a username. Whenever the mobile application tries to be synchronize with server, it should encrypt the device ID with the public key of the server and send it with the data to the server. The authentication module tries to decrypt the device ID with the private key to be sure the request is from the registered user. Otherwise the request will be rejected by the authentication module.

Admin Login: Admin login have user name, password for authentication along with registered Shop name with location Once the admin has logged onto the account their details are stored in the database. Only after that, the Admin could add service nodes to his shop.

Mechanic Registration: Service nodes can login once the Admin has successfully created the head node connection. Service node should start with headnodename_servicenodename, once service nodes logs in it will be verified by the respective Admin node. Then it will wait for its service request share from the Head node.

User registration: New User Registration will prompt for User name, Password, Gender, Location, Mobile Number along with vehicle registration number (if many click on ADD button). Once the user registration is stored in server they will have the access to request for service.

User Login: User’s credentials will be validated upon login. Once they have registered they can login into the application and requests for service.

Shortest path computation module: Uses Dijkstra's algorithm to find nearer mechanic shop using current location identification as destination to the mechanic.It is computed and displayed with the augmented reality mechanism. Using this mechanism the nearby mechanic shops are displayed with big dots and which is far apart are displayed with small dots.

Request Handling Session: Admin node should be in "Active mode" in order to receive requests from users. Once a request arrives, it should be directed to anyone of the service nodes, then the intended location will get shared to the service node. Once he has reached the place, it alarms to inform him. Then the service will be provided.

Review and Updates: On successful completion of the service , it prompts the user for service review. The successful service with 5stars will earn one new service login to his shop. Higher rated shops will be given more preference.

There are similar architectures that can be applied to mobile mechanic applications according to their functionalities. They can also be designed and implemented as a native application, a cross-platform application or a hybrid application. All of the previous architectures have some pros and cons based on user's flexibility.Although implementing native mobile application , it needs investing more time and effort. But it reduces user's time and it is more flexible than any other E-Mechanic service.

VI. SYSTEM FEATURES

Notification: Used to notify user's service request.

Service Request: After user request the service.

Mechanic feedback: Once the service is provided,the particular mechanic professional's service will be reviewed.

A. Functional Requirements:

- Administrator authentication using user id and password.
- RS 232 Serial communication mode is used for this process.

B.Non-functional Requirements:

- 24 X 7 availability of this application.
- Better component design to get better and easy performance.
- Flexible service based architecture will be highly useful for future extension.
- Ease of User-flexibility, performance.
- Security- Privacy, Confidentiality, Integrity, Authentication.
- Comprehensiveness- Transferability, Divisibility, Standardization.
- Maintenance and support.

VII FUTURE SCOPE

The main objective of this project is to produce an interactive and grasping application for the Android marketplace.. Mobile Mechanic Service is composed of two main components: a client-side application which will run on Android handsets based on user's request, and a server-side application which will be used for response and authenticating purposes.This application is designed tohelp in unavoidable Situations of vehicles and is used to provide services of all types of vehicles, by mechanics at various places i.e,anywhere and at anytime.The above proposed system is ease to implement considering the available technology infrastructure and its design implementation. The proposed models are simple,ease of use, secure and scalable. The proposed model is based on serial communication. But for future scope it can be enlarged to connectionless system.

VIII CONCLUSION

Thus the proposed paper shows the flow, structure and working of the Mobile-Mechanic Service which is user friendly i.e. easy to use. It is free of cost on android store.It uses the virtual basis of augmented reality mechanism. It is a time saving process as well as cost efficient application and also available with social relevance. So, we can conclude that the proposed Mobile Mechanic using Augmented Reality detection system can be used to reduce human efforts and also considering the lack of disadvantages this Mobile mechanic is designed.

VIII. REFERENCES

[1] "Implementation of Cloud Messaging System Based on GCM Service". Computational and Information Sciences (ICCIS), 2013 Fifth International Conference. Penghui Li Transp. Manage. Coll., Dalian Maritime Univ., Dalian, China Yan Chen ; Taoying Li ; Renyuan Wang ; Junxiong Sun

[2] "A public safety application of GPS-enabled smartphones and the android operating system"- Systems, Man and Cybernetics, 2009. SMC 2009. IEEE International Conference-Whipple, J.Inf. Syst. Eng. Dept., Southwest Res. Inst., San Antonio, TX, USA Arensman, W. ;Boler, M.S.

"Unified platform for the delivery of notifications to smartphones notification" Carpathian Control Conference (ICCC), 2012 13th International. Mojzisova, A. Inst. of Control &Informatization of Production Processes, Tech. Univ. of Kosice, Kosice, Slovakia Mojzis, M.

[3] "An improvement of the shortest path algorithm based on Dijkstra algorithm "Computer and Automation

Engineering (ICCAE), 2010 The 2nd International Conference on (Volume:2). Ji-xian Xiao Coll. of Sci., Hebei Polytech. Univ., Tangshan, China Fang-Ling Lu.

[4] Developing an Android based learning application for mobile devices", Telematics and Information Systems

(EATIS), 2012 6th Euro American Conference, de Clunie, G.T.Fac. deIng. deSist., Computacionales, Univ. Tecnol. de Panama, Panama City, Panama Serrao, T. ; Monteiro Braz, J.R.- . Serr o, T. Rangel, N. Castillo, A. G mez, B. Rodrguez, .de Barraza, . Riley, J.

[5] S. Weiss, Handheld Usability, 1st ed., Chichester, U.K.: Wiley, 2002, ch. 1.

L. Bass, P. Clements, and R. Kazman, Software Architecture in Practice, 3rd ed., Boston, MA: Addison-Wesley Professional, 2012, ch.13.

[6] Tabris Documentation. (April 2014). [Online]. Available: http://ec2-54-227-161-98.compute-1.amazonaws.com/tabris/docs/arch itecture/.

[7] The JSON Data Interchange Format, ECMA 404-2013.

[8] R. Credle, A. Armstrong, C. Atkinson, R. Bonner, G. Pirie, I. Singh, N. Williams, M. Wilson, and M. Woolley, Implementing IBM CICS JSON Web Services for Mobile Applications, New York, NY: IBM Redbookspublication, 2013, ch. 2.

[9] A. Henry-Labordère and V. Jonack, SMSandMMSInterworkingin MobileNetworks, 1st ed., Norwood, MA: Artech House Publishers,2004, ch 1, pp. 1-28.

[10] J. Schwartz and B. Retford, How to Build an SMS Service, 1st ed. Sebastopol, CA: O'Reilly Media, 2007, pp. 4-20.