

# Embedded System For Dynamic Location Based Advertisements Using Arduino And Raspberry Pi

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**Abstract-** Advertising plays a very important role in today's age of competition. Advertising is one thing which has become a necessity for everybody in today's day to day life, be the producer, the traders, or the customer. the world still uses the age old and primitive techniques for advertisement. There are various ways in which the advertisement system can be improved. Our objective is to make the advertisement system vary and change according to the location of the vehicle. this ensures that we capture the target audience in a much creative and interactive way by providing them information and advertisements that are related to their current location whilst travelling. We intend to create such an advertisement system that will be dynamic and location based using arduino and some essential modules such as GPS, GSM-Support, Display-Support and optional Wi-Fi Integration.

In transportation sector, long distance travellers face so many problems like rush, overload and there many cases of accidents due to overload. This paper provides the solution to avoid accidents by displaying the number of empty seats available inside the bus. So that, the passengers who are waiting for the bus can easily identify whether the seats are fully occupied or not.

**Keywords-** Advertisements, Current location, Transportation sector, passengers, empty seats.

## I. INTRODUCTION

Advertising is one of the form of marketing communication that is used to make a common people aware of a certain product or entity and convince customers that the company's services or products are the best. with the evolution of the internet and smart phone devices, internet advertising has become one of the most important methods for delivering promotional marketing messages to customers.

Advertisements are used to attract users or providing discount. LBA is a new form of advertising that integrates mobile advertising with LBS to provide location-specific advertisements on consumer's devices. in 21st century, advertisement has become ubiquitous but with the same

traditional rudimentary ways and techniques in the sense, in ancient days advertising is done by carving public notices in steel and people were using bronze plate for printing an advertisement. due to these old age techniques, maximum potential of advertisement is not being achieved. to overcome such traditional ways of advertisements we are developing a project with latest technology and easier to implement.

The proposed paper intention is that providing the customers and users useful and relevant advertisement that is around their present location. the proposed project is a part of the smart city concept that is advertisement techniques used in this proposed paper are digital and advanced. thus, our paper will overcome issues like wastage of physical space, reusability and maintenance.

The proposed paper also provides the solution to avoid accidents due to overload by displaying the number of vacant seats available inside the bus, so that the passengers waiting for the bus can easily identify whether the seats are fully occupied or not.

## II. METHODOLOGY

Arduino controller is powered up by a regulated 5V DC from the power supply. GPS will track the latitude and longitude values of the present location. Arduino will read the latitude and longitude values from the GPS device. Arduino controller start comparing the received values with the stored values. When ever both the values matches then controller displays corresponding advertisements of a particular location on the Nextion smart display. We have interfaced camera to our controller. when the bus stops are nearing to our device then camera will be activated and capture the photo with the availability of seats. Depending upon the faces recognized from the captured picture it will count the number of seat counts and the same will be displayed on the LCD display.

**III. WORK FLOW PROCESS**

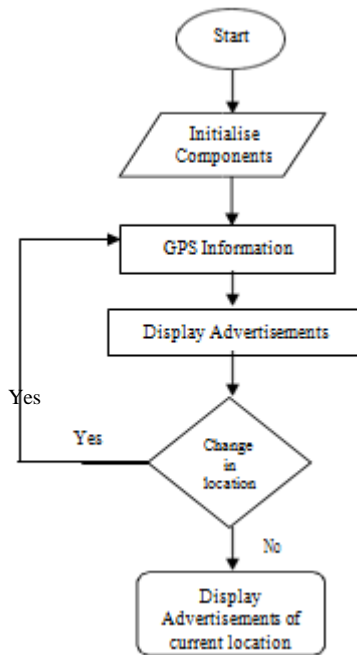


Fig 1: Flow Chart to Display Advertisements

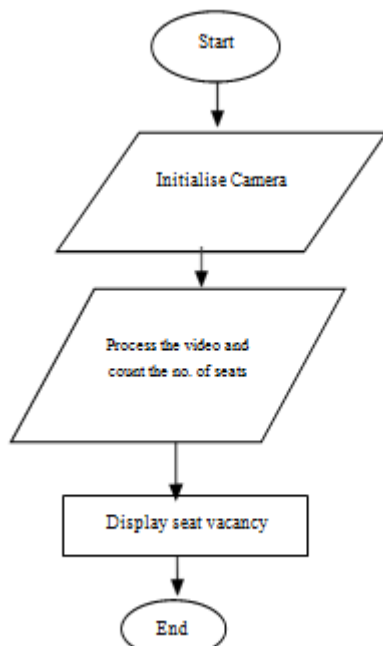


Fig 2: Flow chart to count and display number of seats

**IV. LITERATURE REVIEW**

[1]Shyan-Ming-Yuan, "Wi-Fi union mechanism for internet advertising reciprocal platform in microenterprises" - Article, 2017: With the evolution of the internet and smart phone devices, internet advertising has become one of the most important methods for delivering promotional marketing messages to the customers.

[2]Pankaj Virulkar, "Location based advertisement publishing by using Wi-Fi and QR codes", IEEE, 2015: Advertisements are used to attract users or providing discounts. many use text messages, posters for this purpose. advertisement on mobile devices is need for the current scenario. in this paper, vendors are not allowed to edit advertisement but to publish the advertisement to users according to the interest of customer.

[3]Md. RashidujjamanRifat, "A Location Based Advertisement scheme using Open Street Map", IEEE-15th International Conference on Computer and Information Technology (ICCI), Location based advertisement is a new form of advertising that integrates mobile advertising with location based services to provide location specific advertisements on customers devices.

[4]Surendiran G, "Bus tracker system with seat availability checker, International Journal for Research in Applied Science & Engineering Technology: In this paper we have stated about solving problem of common people using innovative ideas that is with help of some circuits and android app (application). Here we consider some problems of people in bus transport. This android app tracks the current bus locations using GPS in the ticket printer and we have also created an algorithm to find the number of seats available. We use a ticket printer with a SIM card to send this information. So this app gives the information about number of seats available with the help of ticker printer and bus location to the mobile phone. This will solve the problems like waiting in bus stop and wasting time, going in a crowded bus and we give services e you a sleepy or peaceful journey.

**V. PROPOSED SYSTEM IMPLEMENTATION**

The figure 3a. and 3b. shows the block diagram of the proposed system. the arduino controller is powered up by a regulated 5V DC from the power supply, once the arduino controller is powered up, it will read the latitude and longitude values from the GPS device. Arduino controller start comparing the received values with the stored values. whenever both the values matches then controller displays corresponding advertisements of a particular location on the Nextion smart display. Different location GPS values will be stored in controller whenever the corresponding location matches advertisements will changed accordingly whenever the location changes. secondly interfaced camera to raspberry pi when the bus stops are nearing to our device then camera will be activated and capture the photo with the availability of seats, then depending upon the faces recognized from the captured picture it will count the number of seat counts and the same will be displayed on the smart display.

## VI. PROPOSED SYSTEM ARCHITECTURE

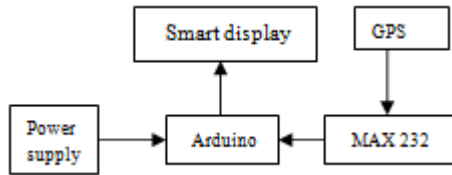


Fig 3a. Block diagram of location based advertisements

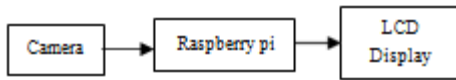


Fig 3b. Blocking for displaying number of vacant seats.

## VII. RESULTS

By this proposed paper we clearly observe that the existing advertisement techniques are inefficient and inadequate, thus they need to be replaced with advanced and modern techniques.

Hence, we infer that the future for advertisement can be improved vastly by making use of:

- Dynamic digital systems
- Local based advertisements
- Personalized experience

In order to avoid accidents due to overload, rush in the bus transport, we make use of modern techniques to implement the number of vacant seats so that the traveller can easily identify whether the seats are fully occupied or not and make his journey safe.

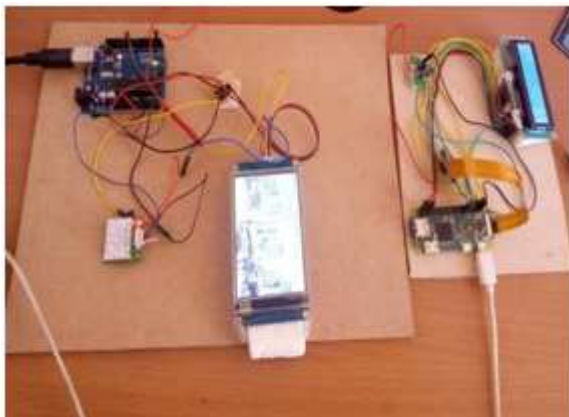


Fig 4: Model of the paper

## VIII. CONCLUSION

Location based advertising has the potential to revolutionize the way advertisements are disseminated to individuals. Nowadays with enough network bandwidth and speed advertisers can push digital advertisements with ease thereby providing a platform for two way interaction with the consumers. In this paper we have tried to propose a location based advertising system based on how frequently a user travels to a particular location. Hence the system can target people commuting from one location to another on a daily basis. This creates awareness among the consumers about the advertisements. The chance for updating product information easily has made the application more flexible for the advertisers. By this project we make the people aware of the advertisements around their present location displaying the number of empty seats available in the bus to avoid accidents due to overload.

## IX. FUTURE ENHANCEMENT

In this proposed paper we have implemented displaying the corresponding advertisements in the bus by tracking the latitude and longitude values of the present location using the GPS and number of vacant seats available in the bus.

In future we can also implement ,

1. Tracking the timings of next bus arrival.
2. Distance and directions to the particular advertising location.
3. Instead of displaying the number of seats, we can also share the pictures of vacant seats/seat numbers.

## REFERENCES

- [1] Thi Thanh An Nguyen, Che-Pin Chang and Shyan-Ming-Yuan, Wi-Fi union mechanism for internet advertising reciprocal platform microenterprises, National Chiao Tung University, Vol 17, special issue 07, July 2017, pp. 01-13.
- [2] Avinash N Bhute and Pankaj Virulkar, Location based advertisement publishing by using Wi-Fi and QR codes, IEEE-International Conference on Green Computing and Internet of Things (ICGCIoT), 2015, pp.1316-1320.
- [3] Md. Rashidujjaman Rifat, Shubrami Moutushy and Hasan Shahid Ferdous, A Location Based Advertisement scheme using OpenstreetMap, IEEE-15th International Conference on Computer and Information Technology (ICCIOT), Chittagong, 2012, pp. 423-428.

- [4] Hiroaki Higaki, Angle-Based Location Advertisement for Location-Based Ad-Hoc Routing Protocols, IEEE-5th International Conference on New Technologies, Mobility and Security (NTMS), Istanbul, 2012, pp. 1-5.
- [5] Ankur Chandra, Shashank Jain, Mohammed Abdul Qadeer, Implementation of location awareness and sharing system based on GPS and GPRS using J2ME, PHP and MYSQL, IEEE- 3rd International Conference on Computer Research and Development, Shanghai, 2011, pp. 216-220.
- [6] Ahmad Ashraff Bin Arffin, Noor Hafizah Abdul Aziz, and Kama Azura Othman, Implementation of GPS for location tracking, IEEE Control and System Graduate Research Colloquium, Shah Alam, 2011, pp. 77-81.
- [7] Thuong Le-Tien and Vu Phung-The, Routing and Tracking system for Mobile Vehicles in Large Area, IEEE-Fifth IEEE International Symposium on Electronic Design, Test & Applications, Ho Chi Minh City, 2010, pp. 297300.
- [8] O. Rashid, P. Coulton and R. Edwards, Implementing location based information/advertising for existing mobile phone users in indoor/urban environments, IEEE-International Conference on Mobile Business(ICMB'05), Sydney, NSW, 2005, pp. 377-383.
- [9] R Sethuraman, G.J Tellis and R.A Briesch, How well Does Advertising Work? Generalization from Meta-Analysis of Brand Advertising Elasticities, 2011, pp. 457-471.
- [10] Jafrul Islam Sojol, Nayma Ferdous Piya, Shalim Sadman and Tamanna Motahar, Smart Bus: An Automated Passenger Counting System, International Journal of Pure and Applied Mathematics, vol. 118, 2018, pp. 3169-3177.
- [11] Surendiran G, Bus tracker system with seat availability checker, International Journal for Research in Applied Science & Engineering Technology (IJRASET), Special Issue-3, November 2014, pp. 42-47.
- [12] R.T Wilson, D.B Till, Effects of outdoor advertising: Does location matter? Psychol. Mark. 2011.
- [13] S. McCoy, A. Everard, P. Polak and F.D Galletta, The effects of online advertising. Commun. ACM. 2007.
- [14] X. Drèze, F. Hussherr, Internet advertising: Is anybody watching? J. Interact. 2003.
- [15] T.-T.-A. Nguyen, C.-M. Hu and S.-M Yuan, An Advertising Reciprocal Platform for Microenterprises, IEEE-31st International Conference on Advanced Information Networking and Applications (AINA), Taipei, Taiwan, March 2017, pp. 79–84.