Real Time Online Bus Tracking System

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Objectives

This project's objective is to develop a android application with following features:

- Help the users to get information about buses
- Count the number of people present in the public buses
- Track the buses on real time
- Provide the data about available buses and crowed in the bus.
- Provide the data about expected bus arrival.

Development was done with following aim:

- Easy of commuting
- Security of users

Introduction

As we know today, in our towns & cities, buses are the one of the main mode of transport. But due to unsystemised bus facility, lots of problems like knowing exact location of a specific bus,whether the upcoming bus has any seat availability or not, detailed route of bus etc are faced.
So, the main focus of the developed app will be to solve these common existing commuting problems. Along with these, in this project our focus will be to improvise the safety & security features.

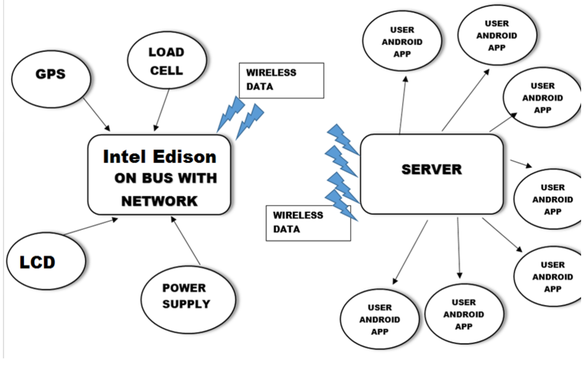

Figure 1: Block diagram of appications

Technologies used

The following technologies were required to complete the project:
Software

- Android studio
- Java
- XML
- GPS
- Google Maps
- Firebase database
- Android phone

Hardware

- Kinect sensor
- Intel Edison Microcontroller
- Arduino UNO

NOTE

In this project we have tried to connect the hardware prototype with the software application to provide a user-friendly Bus system.

Results

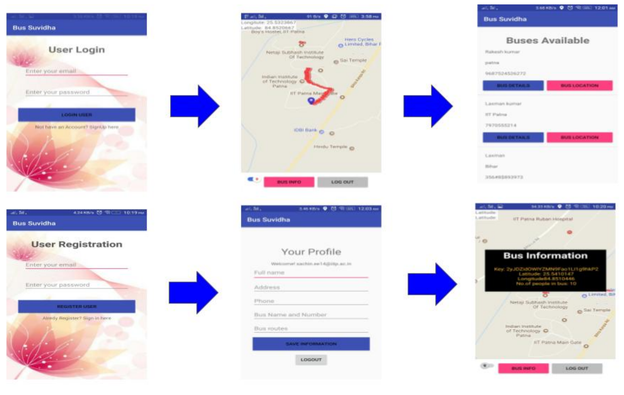

Figure 2: Application's working

Methods

This project has two applications, one for user and other for the buses. The user app works as follows:

- First of all, the user has to login for authentication, which causes current location to be detected by the GPS.
- After that, the user will be able to see all the active buses in their locality.
- The user can get the details of each buses by clicking on their icon like current position, seat availability etc.
- The user can find the list of all the buses. that are to cross the route with their timings.

The app along with the hardware installed in bus works as follows:

- As the bus starts, it gets connected to server and its informations like position, seat availability is being updated with time.

Hardware prototype

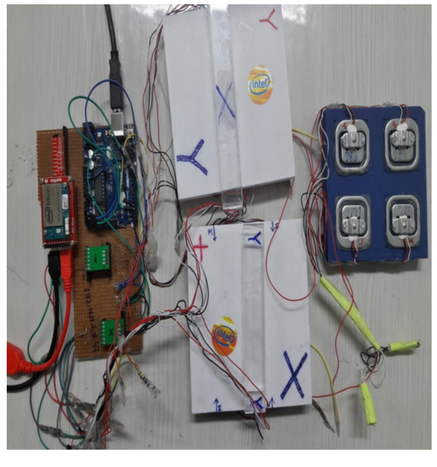

Figure 3: Figure caption

Conclusion

Presently the application is workable & able to do the following stuffs.

- Application is able to show all the multiple buses in an area.
- Application is also capable of real time tracking of the active buses.
- User can get details about seat availability and route of active buses.
- Application is ready to be used and will be deployed.
- Hardware implementation is capable of counting passengers using load cells and validate using Microsoft Kinect.

Future aspects

To make the application more user friendly following, are the developments needed to be made in the application:

- Providing the application with facility to send emergency signals of accidents.
- Should show the hospitals, toilets, police stations in the route.
- Improved Android app will have higher utility in sub-urban towns and cities as well.
- Improve counting method in case of crowd in bus.

References

[1] Dr. Saylee Gharge, Manal Chhaya, *Real Time Bus Monitoring System Using GPS*. Engineering Science and Technology: An International Journal (ESTIJ), ISSN: 2250-3498, Volume 2, Number 3, June 2012.

[2] Harcharan Singh Ranu, *Miniature load cells for the measurement of foot-ground reaction forces and centre of foot pressure during gait*. November 1985

[3] Android studio documentation: `https://developer.android.com/docs/`