Survey on Racing Application to Calculate Real Time Results Based On GPS and GSM for Vehicle and Jetski

Aniket Sambhaji More[1]
Computer Engineering (Computer Networks)
K. J. College of Engineering & Management Research
Pune – India

Mandar K. Mokashi[2]
Computer Engineering (Computer Networks)
K. J. College of Engineering & Management Research
Pune – India

Abstract: Global Positioning System (GPS) has enabled a number of geographical applications over many years. Quite a lot of location-based services, however, still suffer from considerable positioning errors of GPS (usually 1m to 20m in practice). In this study, we design and implement a high accuracy global positioning solution based on GPS and Jet Ski mobility captured by computer system. Our key observation is that computer system-enabled dead reckoning supports accurate but local as well as global coordinates of users trajectories, while GPS provides global but inconsistent coordinates. Considering them simultaneously, we devise techniques to refine the global positioning results by fitting the global positions to the structure of locally or globally measured ones, so the refined positioning results are more likely to elicit the ground truth.

We develop a prototype system, named GloCal, and conduct comprehensive experiments in sea or water areas. The evaluation results show that GloCal can achieve continuous data retrieval from gps sensor and capturing position of the jet ski as well as laps that are been covered on average error with respect to GPS. It uses merely computer system, desktop or laptop and requires no infrastructure or additional reference information. As an effective and lightweight augmentation to global positioning, it holds promise in real-world feasibility.

Keywords: Wireless Sensor Network (WSN), Short Message Service (SMS), ADC.

I. INTRODUCTION

In traditional approach, the results of jet skies races were calculated using the recorded video. There were many manual tasks involved which generated errors in the system. There was no exact predefined track as the races were conducted in sea. So there was a need to a system which will automate all this manual work. In traditional approach, the results of jet skies races were calculated using the recorded video. There were many manual tasks involved which generated errors in the system. We are assigning GPS and GSM enabled device to each Jet Ski participating in a race.

That device will send us the speed, latitude, longitude and time of each Jet Ski. Using this data received from the devices we will calculate the real time results. We can also watch the live race over the internet. We can add penalty to the competitor. We will be developing a socket listener to listen the data coming from devices. We will create parallel sockets. We will be using FIFO to dump the data into database using single connection string. We need to write parser and hex to ASCII convertor to convert the incoming data. This system can be used to calculate the results of any races happening just by using the GPS and GSM devices. We can see the replay of races as well by using the data recorded.

II. LITERATURE SURVEY

An Automotive navigation system is a satellite navigation system de-signed for use in automobiles. We may see this system primarily in high cost cars. It typically uses a GPS navigation device to acquire position data to locate the user on a road in the unit's map database. Using the road database, the unit can give directions to other locations along roads also in its database. Dead rack- oning using distance data from sensors attached to the drive train, a gyroscope and an accelerometer can be used for

greater reliability, as GPS signal loss and/or multipath can occur due to urban canyons or tunnels, also this device can lead the driver to a particular destination by sensing the position of the car continuously. The portable GPS devices have helped increase and enhance safety for the peo- ple. In addition, the GPS system is a phenomenal navigational tool that is vital to every traveler.

This system is good for the driver but by this system the own-er of the vehicle cannot know the current vehicle details as and when needed, so this system may be useful to the driver but it is not that useful to the owner of the vehicle who may want to keep a watch on the driver.GPSylon is able to show maps downloaded from the expedia map servers. It may connect to a GPS device and track your position on the maps. At the moment, it is able to read GPS data in the NMEA standard from a serial GPS device, a file or a GPS daemon across a network. The main feature is the display of various maps. GPSylon allows the user to navigate around like in a digital atlas. It shows maps of different scales, so missing maps of one scale do not result in a black screen, but show the next larger scale. It allows the download of a single map or for a given location or for multiple maps in a given rectangular area from map blast or expedia map servers. In the download mouse mode the user may choose a single map or by dragging a rectangle with the mouse, the user may choose to download maps for a larger area. This functionality allows the user to download maps in a given scale for a larger area.

III. SYSTEM DESIGN

After studding literature survey we modified these papers works and trying to build a Racing Application that will give us best result like accuracy in lap time and distance covered as well as give future GPS predictions to the admin so that it will become easy to declare the winner.

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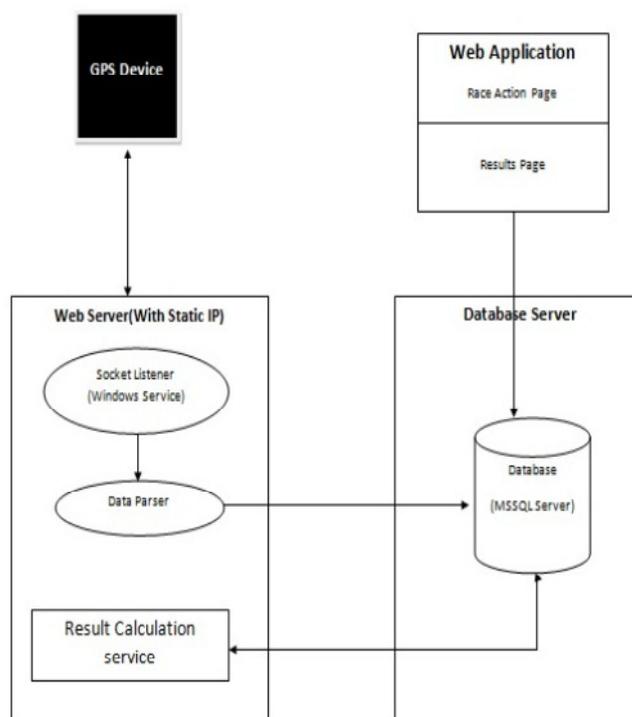

Fig.1 System Architecture

We have used the GPS and GSM technology for this application. We will be developing this application on .NET platform using Microsoft SQL Server 2008 at backend. Protocol of the device and frequency of sending the data is the main parameter in this application. The parallel socket creation is the crucial part in this project.
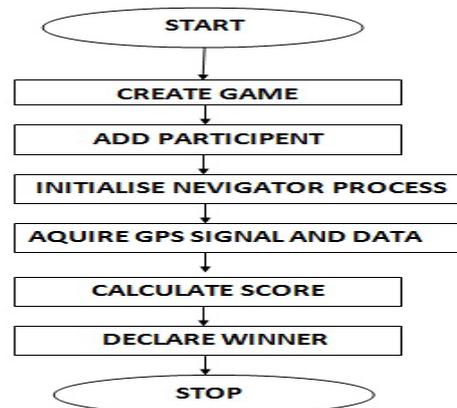
Fig. 2 Steps to Acquire and Process

IV. OUR CONTRIBUTION

GPS Satellite gives the position of the AVL device in the form of latitude, longitude and altitude. All this information is then given to the Server which is received by the socket listener onto a particular port of the server. The data which is received is in the hex format which is non readable to humans. By this raw data a log file is prepared; this log file is further given to the Parser which parses the data according to the protocols of the device. After parsing the data the data is converted to ASCII format which is human readable and stored into various fields of the database table for further use.

As we store the data into database we can use the data whenever we want it for getting reports, for live tracking, for preparing KML and other purposes as well. As it is a web based application so the performance of the it is a web based application so the performance of the system may be hampered by the lack of proper bandwidth, even if the bandwidth is available the performance may be hampered by the working of individual components as it is an asynchronous application depending upon the performance of other parts. If the performance of one part is below average the whole application may suffer, so the performance criterion for each component is important and it cannot be compromised.

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V. CONCLUSION

This project is undertaken to design the real time result calculator of races. We used concepts of GPS and GSM to get the required data. We used interpolation, distance formula for earth, triangulation method and some more algorithms to calculate the results.

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