Abstract

Paragliding is one of the adventurous sports, also played in Nepal especially at Sarangkot, Pokhara. Nowadays it is gaining popularity among the domestic as well as international tourists and has become the main attraction for tourism industry. The cost of paragliding is nearly about Rs 7000 for half an hour. The safety measures regarding the paragliding is the prime concern which have to be taken into an account. The several problems encountered during paragliding includes the lost path of the paraglider, the possible fatalities and casualties due to paragliding in adverse weather conditions. So this project aims to track the position of paraglider and also keep track of the paraglider's behavior for the safe paragliding.

Nepal in the context of celebrating "Visit Nepal 2020" could directly be benefitted by this project, which could no doubt promote the tourism industry to the next level.

Keywords: paragliding, tracking system, Visit Nepal 2020

Introduction

Paragliding is the recreational and competitive adventure sport of flying paragliders: light weight, free flying, foot launched glider aircraft with no rigid primary structure. The pilot sits in a harness suspended below a fabric wing. Wing shape is maintained by the suspension lines, the pressure of air entering the vents in the front of the wing, and the aerodynamic forces of the air flowing over the outside.

Pokhara is the famous place for paragliding in Nepal. There are a total of 62 paragliding companies that are operating commercial flights in Pokhara. In the peak season, upto 300 persons enjoy paragliding a day here.

Paragliding monitoring system is a system developed for the real time tracking of the position of the paragliders on the sky.

There are so many adventurous tourists, who visit sarangkot especially for paragliding and the Government of Nepal have already established Sarangkot as a tourist centre. Paragliding has flourished as a popular industry there in Sarangkot, which is directly associated with the tourism industry of the whole country. Without the proper and reliable development of the paragliding services and the facilities, tourists are not sure enough about the safe paragliding and the possible risks including fatalities and casualties jeopardize them to enjoy paragliding. Consequently the benefits from the paragliding services will be directly affected so that the tourism industry of the whole country will be paralized, as the paragliding services has covered an important part of the tourism industry of the whole country.

At the present context, Government of Nepal is working rigorously to ensure the successful tourism, celebrating 2020 as "Visit Nepal 2020".The Tourism Board set a target of 2 million tourist arrivals in 2020. And this tourists' arrivals is directly proportional to the safe and reliable paragliding services and facilities in Sarangkot. A lot of tourists come to enjoy paragliding in

Sarangkot, establishing the paragliding facilities and services in Sarangkot as the important part of the tourism industry of the whole country, which in itself is considered as the main source of the nation's economy

In this scenario, our project on Paragliding tracking system using GPS aims to mitigate the above mentioned risks and uncertainties, providing tourists a safe and reliable paragliding services by tracking the position of paraglider and keeping the track of the paraglider's behavior for the safe paragliding.

The algorithm to track the paraglider's position has been discussed in the methodology section.

Statement of Problem

As the paragliding is one of the risky adventurous sports, the prime concern should be given to its safety. It is necessary to track and observe the position of the each paraglider in real time. The longitude, latitude and altitude of the paraglider are the variables which will be required to track the position of the paraglider. Also the height of ascent is also calculated.

Project Outline

The project will be mainly concerned with the use of the GPS-GSM module, Server and the Computer.

1. GPS-GSM Module

GPS is an electronic device that sends the x,y,z value of the position of the object to the server. It is kept with the paraglider and provided with the power supply. It uses the GSM module which sends the data obtained from the GPS to the server.

2. Server

Server is the program which receives the data from the GPS and sends it to the computer of the client at the office. It is also used to receive the data sent by the computer.

3. Computer

The computer is the main device in which the tracking of the paragliders are done. The computer receives the positional data from the server and traces the path of the paragliders.

4. Web Browser

The system will be web-based system. A system with the JAVA language will be built that will work based on the web browser.

GPS tracking system is a method of locating the position exactly relative to the earth's surface. The system is placed in a dynamic or static body which can either be a fixed or portable unit.

GPS works by providing information on exact location. It can also track the movement of a person. So, for example, a GPS tracking system can be used by a paragliding company to monitor the route and progress of a path followed by the paraglider and to check on the location of their landing position, or even to monitor wind flow during their transit.

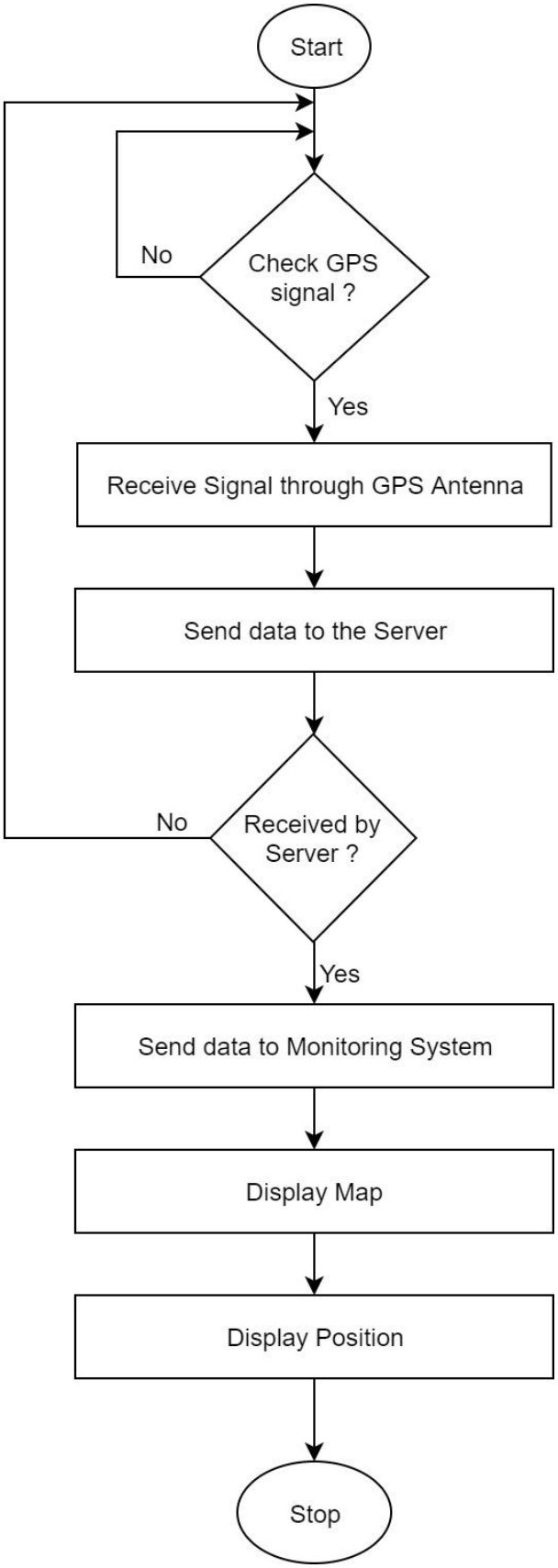
At first the GPS is initialised and checked whether the GPS is on or not. If GPS is not working then the command will be sent to initialise to turn on the GPS. After the GPS is turned on then the GPS receives signals from the GPS Antenna. The received GPS data contains the longitude, latitude and altitude.

Application of the Project

After the completion of the project, the application of the project is not limited to single objective. The project will be applicable in the various fields that one paragliding company need to do for enhancing his profits and also to promote the **Visit Nepal 2020** by safer Paragliding services. The project will be applied in the following ways.

- To track the three dimensional position (x,y,z) of a paraglider in a real time.
- To track the single as well as the many paragliders at once.
- To inform the paraglider about the wind flow rate, flight duration, etc.
- To create the shapefile for the flight path.
- To create a 3D movie for the flight of the individual (in real time).
- To find the appropriate place for safe landing.
- To reduce the possible accidents and casualties due to unsafe paragliding.
- To promote the tourism industry in Nepal.

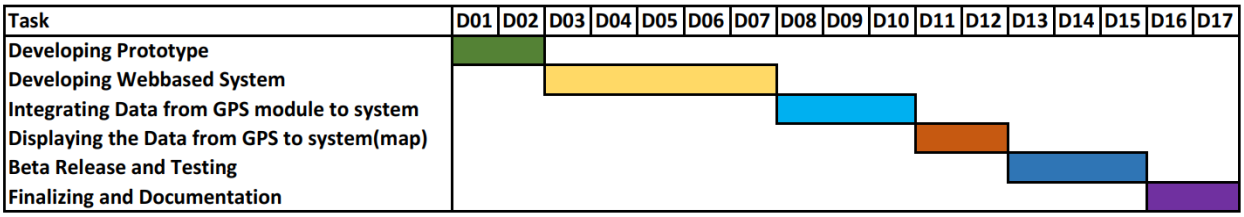
Implementation Details


Start
Check GPS signal ?
No
Yes
Receive Signal through GPS Antenna
Send data to the Server
Received by Server ?
No
Yes
Send data to Monitoring System
Display Map
Display Position
Stop

Cost Estimation

SN	Particular	Rate (Rs.)	Quantity	Total Amount (Rs.)
1	GPS with GSM Module	3000	1	3000
2	Printing			300
3	Misc			300
	Total			

Time Scheduling



The above Gantt Chart describes the tasks in the vertical column and the days on the horizontal column. The intersection of the task and the days represent the number of days to complete the tasks. Altogether it takes about 17 days to complete the whole project.

Output:

After the completion of our project, the paragliding services and facilities in Sarangkot will be safe and reliable. The following output will be noticed from our project:

i. The project tracks three dimensional position (x,y,z) of a paraglider in a real time.
ii. It will track one and many paragliders at once.
iii. It will inform the paraglider about the possible risks and uncertainties, such as: the wind flow rate, flight duration, etc.
iv. The shapefile for the flight path will be created.
v. 3D movie for the flight of the individual (in real time) will be created.
vi. Informs the appropriate place for safe landing.
vii. Reduces the possible accidents and casualties due to unsafe paragliding.
viii. Promotes the tourism industry to the next upper level in Nepal.