

The Development of Information System for Management Student Transfers in Institute using GPS Networks

Punika Kokilarat¹, Benchalak Maungmeesri², Dechrit Maneetham³

¹Technology Management, Valaya Alongkorn Rajabhat University, Thailand

²Technology Management, Valaya Alongkorn Rajabhat University, Thailand

³Mechatronics Engineering, Rajamangala University of Technology Thanyaburi, Thailand

*corresponding author: punika.ko@vru.ac.th

Abstract: The research presents the problem of prioritize student transfers during and after school. At the same time, must develop communications between students and parents by monitoring and localizing vehicles systems via mobile phone. The system consists of many devices such as server, router and so front that the system to provide real-time and arbitrary server automatically. All vehicles will links to a server directly as Global Positioning System (GPS) and Internet of Things (IoT) then receiving and responding as latitude and longitude. Overall, the system can real time monitor via mobile phone and it convenient and able to check all students and parents at all times.

Keywords: Wireless Network Control, Remote Control, Vehicle, GPS.

1. INTRODUCTION

At the present, student transfers are very necessary and do not want cause confusion when students come to pick up and deliver students in an urgent time. The goal of our research is to solve problems in the control system of the car rank sequence therefore has adopted the method of control GPS to use instead to solve problems [1],[2]. Communications were control through mobile phone [6] and management student transfers system. By the way, the developments of effective monitor control on automatic mode and adding new events.



a) car park



b) student area

Figure 1: Parking Area

2. METHODES

In this research we are using mobile phone via GPS networks. The IoT system is to design and connected with devices and other services. The IoT system is integrated into the software development and the car movement as shown in Fig. 2. The Visual Studio Code software development can be divided into three language as follows:

- Hypertext Markup Language (HTML)
- Cascading Style Sheets (CSS)
- JavaScript (JS)



Figure 2: IoT Network System

2.1 Software Development

As already mentioned, all three software will be written and combined to achieve a complete program. A base software is connected to anto.io which is linked to all data via [firebase](https://firebase.com) [7]. It can be controlled via mobile phone and easily commanded or controlled.

```
index.html - public - Visual Studio Code
EXPLORER
  OPEN EDITORS
    index.html
    index.js
  PUBLIC
    404.html
    index.css
    index.html
    index.js
  index.html x  JS index.js
    index.html > html > body > div.container > div.row
      1 <!doctype html>
      2 <html lang="en">
      3 <head>
      4 <!-- Required meta tags -->
      5 <meta charset="utf-8">
      6 <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
      7 <!-- Bootstrap CSS -->
      8 <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">
      9 <link href="index.css" rel="stylesheet">
      10 <title>Hello, world!</title>
      11 </head>
      12 <body>
      13 <h1 class="heading">IOT Robot Control</h1>
      14 <div class="container">
      15 <div class="row">
      16 <div class="col">
      17 <h2>Distance</h2>
      18 </div>
      19 </div>
      20 <div class="row">
      21 <div class="col">
      22 <h2 id="show_distance"></h2>
      23 </div>
      24 </div>
      25 <div class="row">
      26 <div class="col">
      27 </div>
      28 <div class="col">
      29 <button type="button" class="btn btn-primary" onclick="forward()">Forward</button>
      30 </div>
      31 <div class="col">
      32 </div>
      33 </div>
      34 </div>
      35 <div class="row">
```

Figure 3: Software Development

2.2 SYSTEM SPECIFICATION

The system uses GPS as a real-time transmission system that sends values in order to know the position system as longitude and latitude and coordinates of the movement [8]. Each moving vehicle sends information and all data then will be received data real-time and response to the server automatically. The flowchart of moving vehicle can be shown in Fig.5.

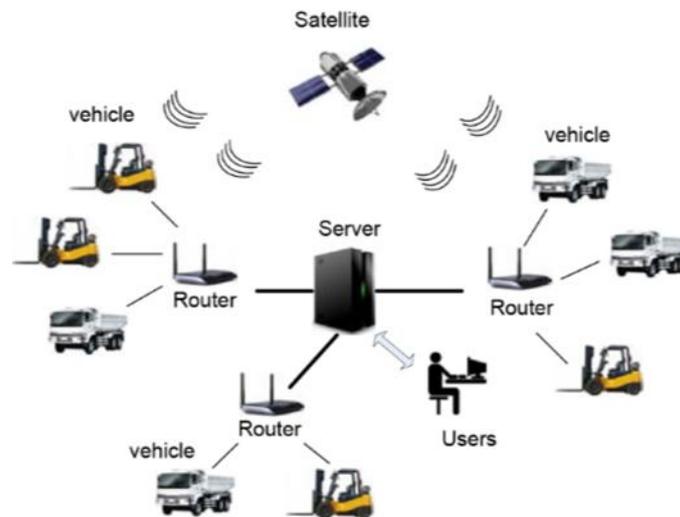


Figure 4: GPS and Server Network

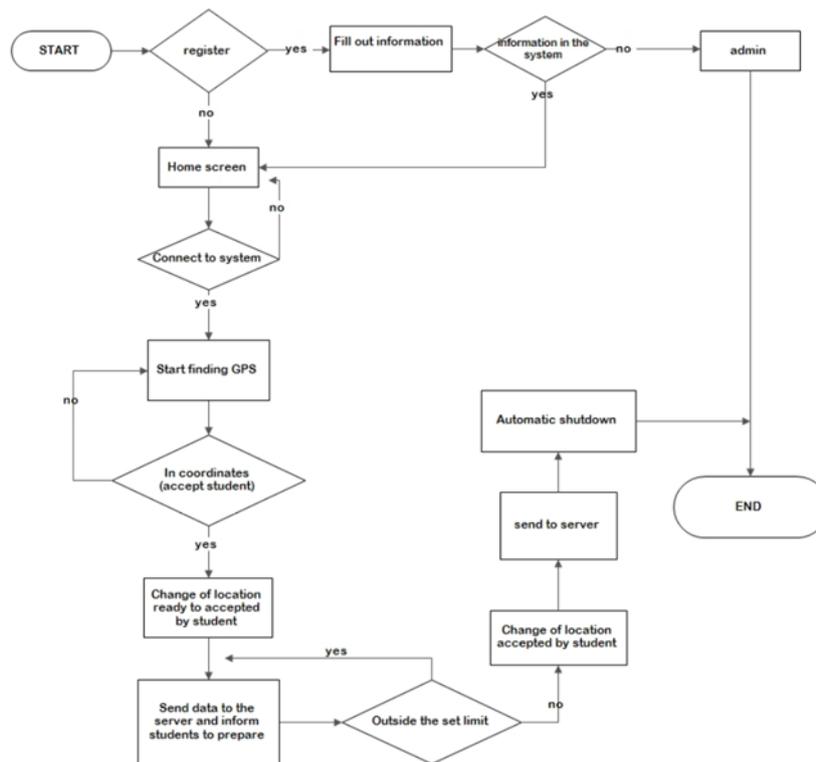


Figure 5: Flowchart of moving vehicle

3. VALIDATION

The proposed is analyzing and test moving vehicle car to pick and drop the student in institute. For the location in institute has similarity the cycle. All parents have mobile phone and will register at the server in institute. Students can check their parent’s car by reducing the time and will check the positioned to make it easy and convenient for receiving and sending students everyday. In addition, the parents car will driving by follow for GPS tracking as follows:

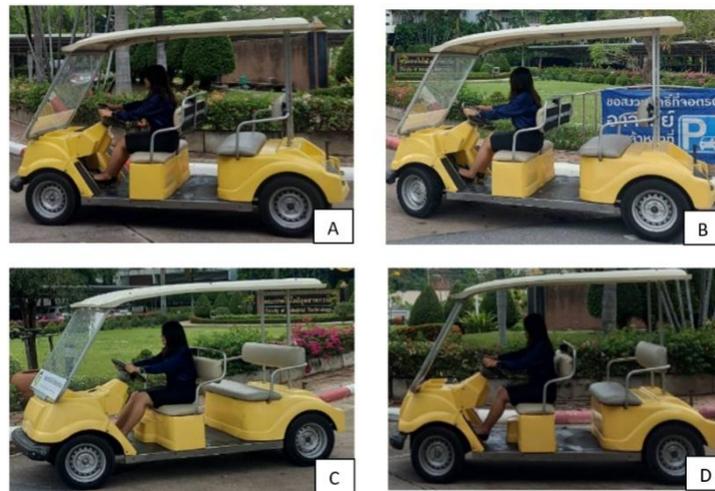


Figure 6: Car moving follow GPS tracking

Table 1.1 Location longitude and latitude (Type A) Table 1.2 Location longitude and latitude (Type B)

Item	longitude	latitude	Item	longitude	latitude
assign route	100.612379	14.133123	assign route	100.612343	14.133118
	100.611165	14.133112		100.611196	14.133122
	100.611135	14.133114		100.611165	14.134569
round 1	100.612384	14.133123	round 1	100.612316	14.133122
	100.611705	14.133114		100.611120	14.133107
	100.611128	14.133114		100.611158	14.134587
round 2	100.612386	14.133123	round 2	100.612309	14.133126
	100.611709	14.133114		100.611180	14.133159
	100.611170	14.133114		100.611150	14.134550

Table 1.3 Location longitude and latitude (Type C) Table 1.4 Location longitude and latitude (Type D)

Item	longitude	latitude	Item	longitude	latitude
assign route	100.61378	14.13434	assign route	100.612329	14.134577
	100.612405	14.13433		100.611819	14.13312
	100.612384	14.13312		100.611161	14.134545
round 1	100.613728	14.13434	round 1	100.612311	14.134644
	100.612397	14.13430		100.611816	14.13311
	100.612323	14.13311		100.611174	14.134603
round 2	100.613808	14.13436	round 2	100.612343	14.134561
	100.612414	14.13433		100.611752	14.133125
	100.612386	14.13312		100.611150	14.134564

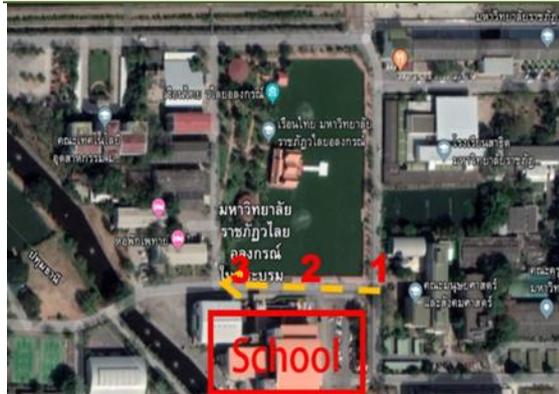


Figure 7: Mapping of moving vehicle (Type A)

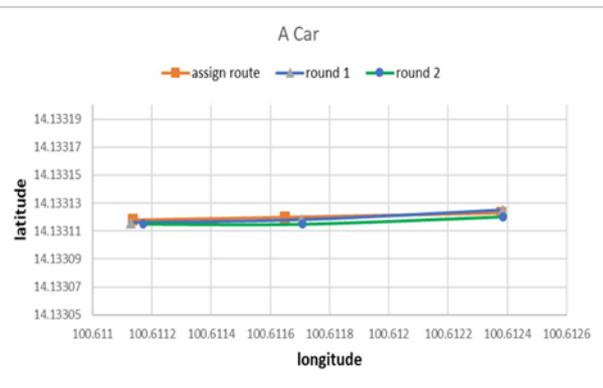


Figure 8: Driving and assign route (Type A)



Figure 9: Mapping of moving vehicle (Type B)

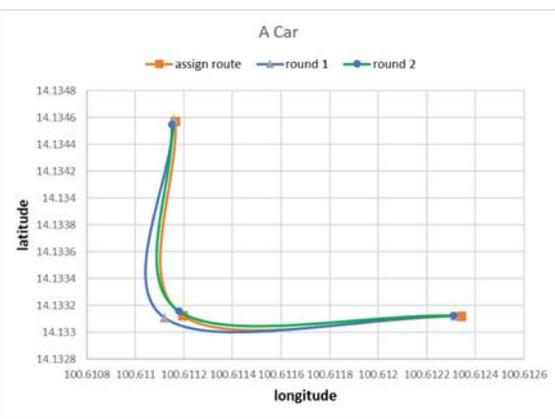


Figure 10: Driving and assign route (Type B)



Figure 11: Mapping of moving vehicle (Type C)

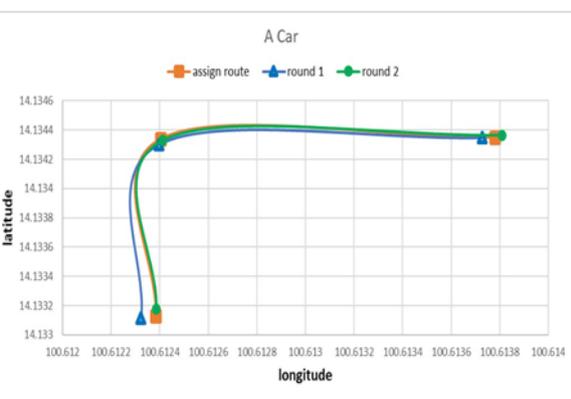


Figure 12: Driving and assign route (Type C)

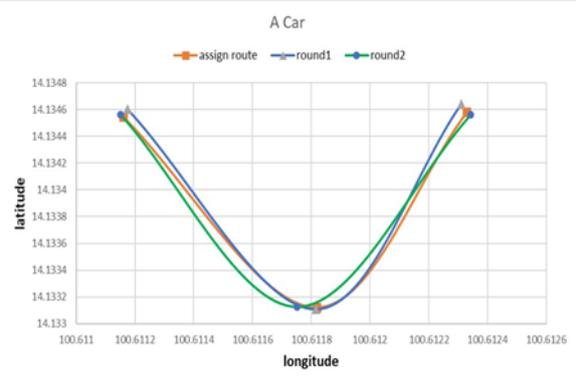


Figure 13: Mapping of moving vehicle (Type D) Figure 14: Driving and assign route (Type D)

4. CONCLUSION

The implementation of GPS module and control via IoT that is suitable for the teacher, the parent and the student. The result shown the percentage for moving vehicle as four type. Type A, the GPS and IoT control can satisfy the percentage nearly the assign route at %97.87 Type B, the GPS and IoT control can satisfy the percentage nearly the assign route at %98.43 Type C, the GPS and IoT control can satisfy the percentage nearly the assign route at %95.84 and Type D, the GPS and IoT control can satisfy the percentage nearly the assign route at %96.60 Overall, the application of GPS and IoT control intelligent vehicle more effective.

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