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A Support System for Situation Awareness

Using Twitter

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In recent years, smart phones and mobile terminal are getting popular, you can communicate with others wherever and whenever by using them. While our life is becoming fulfilled, without understanding other's situation, there is things like phone bell during a meeting constantly happened. Moreover, it is very difficult to know the situation of other members within the same network environment, like on campus or offices. For example, things like visiting someone who is not there, or interrupting during a meeting are constantly happened. There are many researchers ho deal with problems on the unawareness of situations. The past researches have presented various methods for recognizing uses' actions. However, the recently researches have to choose one's destination when the objects move from one place to another, so it is very troublesome for the users and the effect of real-time is very low.

In order to solve the problem of unawareness about other members' situations beyond time and space, my research is to build an assistant system that can help uses to aware the action of each member in a group.

This system uses the location detection system. When the system detects the RFID cards wore by users, the system recognizes antenna number and tag ID from radio wave of the cards. The information will be sent to a system sever. The obtained information is written in database, which will be read out and published on Twitter's time line. When the information being showed on Twitter, the URL of the page where the detailed information showed will be attached. The webpage consists of a map that shows the users location, the history of movement, and a visualization graph.

(1) Function of Map Visualization

In this function, the location of users can be obtained in real-time. In twitter, the account of [user_state_test] is registered, which can report the users' location. By using the other members' location could be understood. In order to show the location more vividly, the function of Map Visualization is considered.

(2) Function of displaying movement

By using the application of displaying movement, the situation of users can be obtained. When getting the information, it will be showed on maps, and the location and situation of users should be considered together. In this way, not only the others could know the location of one, the location of others could also be understood. Therefore, the trouble that caused by not knowing the location of others like interrupting meeting will be effectively avoid.

(3) Function of visualization graph

In order to grasp the movement situation of oneself and others, I created the graph page that visualizes the movement history. During what period of time and where can be showed in graph. Before login to graph page, one needs to select a date on the calendar page. In the graph, the X-axis is for time, and Y-axis is for location, by using this map, one can easily know the staying time at one place and the route of a day.

In order to test the effectiveness of this system, during Dec. 26th 2011 and Jan. 8th 2012, I conducted an evaluation experiment. Five participants evaluated the three functions. Moreover, I analyzed the data obtained during experiment, and confirmed the correctness and effectiveness of real-time of obtained data. In the end, this system is proved to be effective. From the feedback of the five participants, by using this system, the trouble that is caused by not knowing the other members' location was successfully resolved. By using the function of movement history the participants can understand their movement situation during every day. On the other hand, because I used the college location testing system, there were cases of incorrectness caused by the less one-meter distance of one leader. The location detecting system sends antenna number and tag Id in form of radio signal. Because of which, different sender with different antenna number can detect the direction of moving object. Therefore, it is necessary to supplement the not-obtained location information based on the passing direction.