The study of Fuzzy theory applied to cool guys looking for beautiful girl

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Abstract

Given that many young men and women like to match men and women like games, we want to make a way. Most of the current matching game is remote, and can not see each other which is little lonely. So we want to make a through positioning device, location services, and NS2 simulation path and fuzzy theory to achieve that in reality matching method. The study by global satellite positioning system provides precise positioning rain or shine, with location services to provide location and can travel in the direction of addition through NS2 to simulate the user's walking speed and direction for people to use fuzzy theory to match to achieve the extension of the positioning and matching services.

Keywords: fuzzy theory, cool guys, beautiful girl

1. Introduction

In recent years, many vehicles, pedestrians and local landmarks positioning and navigation demand originally used for military, surveying and air navigation using Global Positioning System (GPS) are spread in the general civilian use. Location Services (LBS) is a technology through different combination of wired or wireless, providing time-sensitive information and regional content. Both the above can provide the GPS to locate and display geographic information by the extension of LBS location-based services.

There is a match game between men and women, mainly through the two input names, constellations, and blood type ... etc. It provides a variety of relationships implied answer to meet the curious men and women. However, only one person playing this game does not see each other a bit lonely. To this end, we provide real cool guys and search for a sister of the mechanism, designed to allow registered with the girl or the cool guys are GPS and LBS by the display on the map, and then help them match so that they follow our instructions to find each other to increase the fun, cool guys. If you are not satisfied with paired sister or can send SOS signals, we will re-pair for him or her until you are satisfied.

Each router is connected with two or more networks, being responsible for IP packets between these networks detour: a network interface from the packet is received on arrival by the detour and then is used the appropriate interface to send packets unless the destination is directly connected to the network, or to continue to send packets for the router, so that the data reach their final destination. Router system constitutes the basis of the Internet infrastructure to handle the direct transfer of information in addition to all the network packets.

2. Literature review

2.1 GPS

GPS (Global Position System) satellite navigation and positioning in its application, any person can obtain accurate three-dimensional position, velocity and time. At first, it is used for U.S. defense strategy developed; and now part of it has opened to civil use in positioning, tracking and navigation and other related work on. [1]

GPS is generally from space satellites, ground control and user receiver composed. They had 24 satellites in space. Each satellite in height is above the Earth about two million kilometers. Each satellite orbits with nearly circular of 11 hours and 58 minutes around the Earth once, a total of six tracks, a track six satellites, orbital interval of 60 degrees and 55 degrees of the equator the interval angle. The second part of the ground control, is divided into the Master Control Station, Ground
Antenna and Monitoring Station clues to the Ground Antenna by the station to obtain the information transmitted to the master control station integration analysis. The third is the user receiver for receiving GPS satellite signals, nuclear localization analysis to obtain navigation information, processing and completion of navigation approved work.

2.2 NS2 network simulator

This study used network simulation tool NS2, NS2 is an open and free network tools. Now includes modules from different people around the world to develop out of this study module for wireless personal network by New York University developed by the Department of Electrical Engineering. In addition to radio waves to send content with NS2 simulation tool available, other parts are fully compliant with the protocol IEEE 802.15.1. NS2 network simulator in the wireless network model was originally developed by CMU’s Monarch group developed from the study, only a simple stand-alone analog wireless network (ad-hoc networks), and then again as a basis for further extension of the controller-based wireless network (wired and wireless networks) and Mobile IP and other network infrastructure that will be introduced later by the CMU’s Monarch group of independent development and extension of infrastructure-based wireless network in the after-controlled wireless network. [2]

2.3 Fuzzy theory

In Fuzzy we using Membership Function value to denote a concept, the use of between 0 and 1 the values to denote an element belongs to which a conceptual level. This number is called the element for this collection of Membership Grade, shown in Figure 1.

Fuzzy control system is divided into: Fuzzification interface, Fuzzy knowledge base, fuzzy decision logic, and defuzzification four parts. Among them, Fuzzification Interface interfaces for receiving measurement data acquisition value. Then, the volume of work is carried out in order to facilitate the observation volume range of conversion to the language variables, etc. regardless of the domain. Finally, the input data can be converted into the language of the performance of the fuzzy set values. Fuzzy knowledge base is the database to provide language variables needed to define (ex: variable regardless domain, language item subset and membership function of planning, to facilitate the supply of linguistic control rules and FLC in fuzzy data management). The language control rule bases use various methods to define a set of future control rule language used to describe the control objectives and control of domain experts in strategy. Defuzzification Interface, mainly corresponding to the level of work carried out to facilitate the range of the output variable values is converted to equivalent regardless domains. Defuzzification, the inferences of future control actions, results in clear control of the actual action. Decision Making Logic is the Fuzzy inferences institutions. It has simulated the human ability to make decisions to determine. This is based on the unique approximate human reasoning methods. Fuzzy extension makes inferences real future of computing technology institutions (computation unit).

3. System Implementation and Route simulation
3.1 Implementation

When the girl wants guy is paired, you can connect through the TRACKER to use our server-side, and then we can obtain the position of being location that is kept up to date. Figure 2 is obtained to the girls’ location.

Figure 2. Obtain to the girls location

Then the girl is made server-side data entry and the right to change the location on Google Maps to enter the location Figure 3.

Figure 3. Hot girl

Want to find cool guys must be our registered, so we can ensure its authenticity and security. Figure 14 shows cool guy.

Figure 4. Cool guy

When cool guys even when calculated on the server side and the cool guys are paired distance and orientation between the girl and the red wire, then re-send SMS notifications cool guys, girl of the bearing pair, shown in Figure 5.
3.2 Route simulation

We use NS2 (Network Simulator 2) simulator to simulate the dynamic routing under point a (node 1) that can reach the path, shown in Figure 6, 7.

Of which 99 were from those who can not reach the table, and a negative number express the shortcut, Figure 8 under the table and match the user's transmission, as to where to move point to determine and where to point the way. We do use the Floyd-Warshall algorithm for the judgments based on their algorithm to determine the final result, as shown in Figure 9.
From the above chart if you point one, it should have to go through point 3 to point 4, then passes through the point 5, then those after point 1, and finally to point 3, which is the result of the Floyd-Warshall algorithm to determine the shortest path to reach the point of way. Because we use NS2 to simulate the user's action, we are to reach the scheduled time but the user has not arrived at the designated point. We assume that users get lost, so the user will be based on the current position as a starting point and then issue a newsletter to give tips.

4. Fuzzy match

In experiment, managers in the appearance of accumulated experience to analyze the match, and to establish its rules. Height and BMI classification and the fuzzy rules as the input; complete inference, after defuzzification, the output is to get a clear signal that we are so with a basis for judging the signal to assess the pairing. We use MATLAB to help us calculate the ambiguity function, so this only made use of what algorithm and parameters of fuzzy grades. The steps are as follows

The first step, the data do blur. First define the height. The results obtained using inquiry, would be broadly divided into three levels tall, short, medium and high, as shown in Figure 10.

Height classification = \{short, medium, high\} = ask passers-by what we received.
- Low: 150 ~ 170 cm
- Medium: 165 ~ 185cm
- High: 180 cm above

Then define the BMI, the reason why no weight in this, mainly because of the relative height with a weight on the relationship between the data from the Department of Health released the BMI data, plus some of the gray area, can be divided into three levels; light, standard and weight, as shown in Figure 11.

BMI classification = ask passers-by what we obtained = \{light, standard, fat\}.
Thin: 20  
Standard: 16 ~ 26  
fat: 24 or more

Figure 11. BMI distribution

The second step defines the rules, the height of the first division that will be based on the user to confirm the conditions of the first division, followed the decision based on the user's BMI to the second condition. If the user's height, its level of division in the short Division in the very small to medium _ small, between those based on BMI distribution to confirm the level.

The fuzzy rules will be written in the above fuzzy rule table, as the Table 1 below.

<table>
<thead>
<tr>
<th>level</th>
<th>height</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>short</td>
</tr>
<tr>
<td>thin</td>
<td>Very small</td>
</tr>
<tr>
<td>medium</td>
<td>Medium small</td>
</tr>
<tr>
<td>fat</td>
<td>small</td>
</tr>
</tbody>
</table>

The third step is to define fuzzy functions and defuzzification methods. Expert knowledge is often used to obtain Mamdani method because this method can be more direct, more close to the human way to describe the views of experts and to use centroid defuzzification.

The fourth step, for each user calculated the value of each person, and let a few people first pair of similar quality. If not satisfied, in accordance with the conditions proposed by the user do a fuzzy match (EX: the matching object increase in some parameters, such as the height up a bit ... and so on) until the user satisfaction, as shown in Figure 12 you can change some parameters to improve the value matching the first parameter is the height, and the second is the BMI.

\[
\gamma = \gamma - \\
190 \ 35 \ 195 \ 35 \ 190 \ 22
\]

\[
\text{results} = \text{results} - \\
0.6344 \ 0.6560 \ 0.9450
\]

Figure 12. Result Figure

Define the fuzzy output level, the higher the level of representatives as possible, which is divided into six levels, the Division is shown in Figure 13 below.

Very small: 0.2 the following  
Small: 0.15 ~ 0.4  
Medium _ small: 0.36 ~ 0.6
5. Comparison

In order to verify the last chapter, the proposed FUZZY matching effectiveness, we make a comparison in EXCEL, a good validation of its function. First, we generate ten random numbers EXCEL, including 1 to 5 groups for boys and another group for girls 6 to 10, contains two values of height and BMI; height 100 cm to 210 segment in between, and BMI Division 10 to 36, its value as a random number table in Table 2.

Table 2. Random number table

<table>
<thead>
<tr>
<th>number</th>
<th>high</th>
<th>BMI</th>
<th>Fuzzy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>109</td>
<td>22</td>
<td>0.56</td>
</tr>
<tr>
<td>2</td>
<td>154</td>
<td>27</td>
<td>0.27</td>
</tr>
<tr>
<td>3</td>
<td>133</td>
<td>19</td>
<td>0.49</td>
</tr>
<tr>
<td>4</td>
<td>111</td>
<td>32</td>
<td>0.37</td>
</tr>
<tr>
<td>5</td>
<td>139</td>
<td>32</td>
<td>0.37</td>
</tr>
<tr>
<td>6</td>
<td>198</td>
<td>17</td>
<td>0.41</td>
</tr>
<tr>
<td>7</td>
<td>167</td>
<td>11</td>
<td>0.31</td>
</tr>
<tr>
<td>8</td>
<td>109</td>
<td>14</td>
<td>0.51</td>
</tr>
<tr>
<td>9</td>
<td>180</td>
<td>15</td>
<td>0.27</td>
</tr>
<tr>
<td>10</td>
<td>136</td>
<td>17</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Then use the traditional paired, that is, paired at random, in a direct jump to the matching four numbers, namely 1 with 52 with 6,3 with 7 and so on, pairing after their poor and BMI based on height to determine the success rate difference, from 0 to 100 re-power, as shown in Table 3, the traditional pairing table.

Table 3. Traditional pairing table

<table>
<thead>
<tr>
<th>number</th>
<th>Pair object</th>
<th>Success rate</th>
<th>Height range</th>
<th>BMI range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>6</td>
<td>89</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>60</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>69</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>2</td>
<td>69</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>72</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

Fuzzy then used to help 10 people with the calculated value, then its value based on proximity to the pair, the matching results are listed in Table 4 fuzzy matching.
Finally, compare the use of both traditional pairing and FUZZY matching success rate, so the above five pen and then taking the average success rate, the results show relatively FUZZY pairing is effective in improving the success rate of matching, as Figure 14 Comparison of the show.

![The success rate of matching](image)

**Figure 14. Comparison**

### 6. Conclusion

This thesis is to provide a reality for people in pairing mode, mainly through unimpeded around the clock to provide the GPS precise positioning. The use of fuzzy theory is that people do not know the definition of pairing, and use NS2 to simulate the road to join this person's walking speed to confirm whether the person has arrived at the designated points within the time limit. Then our structure represents a sequential flow diagram for the example when doing anything. Finally, we want to be able to match objects on the road looking for a way to enhance the fun of male and female pair, and thus enhance the quality of the game.

Among them, we use the Floyd-Warshall algorithm to get the points to reach the point of the path, to shorten the time spent walking and to speed up the pairing of the two meet. Using fuzzy theory to analyze the external matching those parameters, the main hope is to enhance the success rate of matching. The pair breaking will be applied in a given pair's request to modify parameter values until the pair were satisfied. I use NS2 to simulate the pair that were walking direction and speed, if we show matching server-side towards the wrong direction by. Then I'll send newsletters to inform our matching errors that were corrected. These mechanisms are mainly those who want to easily match play, easy to find and easy to match.

### 7. References

[1] Ren-Jhu Liou, Jhih-Ren Wu, GPS program design and development, XBOOK, 2008

[2] Fu-Ya Sie, Research of cross-layer handoff scheme based on IEEE 802.16e, National Central University, 2006
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