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Social Aspects of Dependency in Navigation: Route Guidance using Mobile Phone with Location Information

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Abstract

We are currently developing a Route Guidance system, based on a mobile phone that gives Location Information. One of our research goals is to discover what features a 'Route Guidance Service' needs in order to be useful for pedestrians.

Is 'Houkou-Onchi' A Cognitive Problem ?

'Houkou-Onchi' is a Japanese term commonly used to describe a person who has no sense of direction and who easily loses his way. Shingaki (1997) found that those who easily get lost neither find relevant landmarks, nor utilize those they do find. This finding is in accord with previous research that relates human navigation ability with cognitive ability. However, it is not yet known whether 'Houkou-Onchi' can be deduced to solely cognitive abilities. We believe there are two aspects: social and cognitive.

Social Aspect of Houkou-Onchi

It is interesting that the Japanese seem to like describing themselves as Houkou-Onchi. Our survey of homepages on the World Wide Web in Japan, and from interviews, revealed the following:

1) Self-reference as Houkou-Onchi occurred in more than seven hundred homepages. There seems to be no equivalent in the homepages in other cultures.

2) Many Japanese easily volunteer a description of themselves as Houkou-Onchi whether they are or not.

3) Women are more likely to describe themselves as Houkou-Onchi.

4) Some people tend to declare that they are Houkou-Onchi so that they can delegate the responsibility of navigation to other people around them.

These indicate that, in Japanese culture at least, Houkou-Onchi is not a purely cognitive construct, but a social construct, because the concept is closely connected to the relationship with other people. As a result of self depreciation of navigation ability as Houkou-Onchi, some of them does not initiate navigation on their own, which leads to degradation in their actual performance. Most of those who believe they are Houkou-Onchi feel that they suffer a lot as a result of this, hence it is necessary to give them support. Thus, it is necessary to consider these social aspects if we are to develop a route-guidance system.

Requirements for a Route Guidance System

We believe that our Route Guidance system will be used by both Houkou-Onchi and non Houkou-Onchi people. For this purpose we think it is necessary that our Route Guidance System should support both cognitive and social aspects of human navigation.

- Cognitive Support for Navigation: Route guidance should provide enough information. According to Shingaki (1997), bad navigators have difficulties such as memorizing informative landmarks at intersections, finding them, and utilizing them in a second visit. Guidance needs to be informative enough so that even Houkou-Onchi can find relevant landmarks and other cues.

- Social Aspects of Support in Navigation: Some abandon their navigation on their own, saying that they are Houkou-Onchi, in the situation where there are others that lead them. It is, therefore, necessary to introduce a neutral guide which give them just informational help for their navigation.

Route Guidance using the Mobile Phone

It is necessary to provide a system which enable the guide to locate where a pedestrian is, as there is no previous interaction with them. We have been examining whether Route Guidance via Mobile Phone can be of some help. Our system uses Personal Handy Phone with Location Information (PHS/LI), which is now in service in Japan. If a pedestrian has this phone, his location is notified to the Location Information Center (LIC), run by PHS company. He can ask questions to the route guides using PHS. The guides have an access to LIC, and the appropriate location of him is retrieved and drawn on the map in front of them. Thus, guides can supply the pedestrian with the most informative information without being in the same place.

By using this guidance system, a user (even a Houkou-Onchi) can have immediate cognitive support (directions, landmarks, and other) from the guides. This system lessens the burden on the Houkou-Onchi person who otherwise has to describe where he is when he is lost, and helps him to get some experience of navigation.

Reference

Shingaki, N. Adaptive switching of focus of attention in navigation task, *Proceedings of MERA97*, Tokyo, 1997.