研究課題名

大規模災害時にも機能する「助け合い通信」の創造・実装・展開

Creation, Implementation, and Development of Cooperative Communication Platform
working under Large-Scale Disaster

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Abstract

When a strong and large earthquake hits a densely-populated area, the function of the whole city would be lost. Under this situation, many people would try to walk home. For these people under difficulty, the information in their walking distance (within the radius of a few kilometers) is very important. If the real-time information in the city (such as the road condition, the situation at and around the train stations, and the availability of the restrooms in the convenience stores) can be obtained, things could be easier for these people.

However, the communication infrastructure could be damaged and could be suspended in the area under a large-scale disaster. In this sense, people walking in the damaged area right after the strong earthquake do not have any measure for obtaining the real-time local information.

To solve this problem, "cooperative communication platform" has been invented. The smartphones and the mobile music players are equipped with near field wireless communication devices such as Bluetooth. These devices can be used for exchanging small pieces of information when people walk and pass each other. The successive exchange of the information by the chain of passing-each-other could widely spread the information among the mobile communication devices carried by the people walking in the city right after large-scale disaster.

The final goal of this research project is to create and implement the system that enables the people walking in the city to obtain the local (within the radius of a few kilometers) information in a real-time manner through the cooperative communication platform. This system should be implemented in the real world in a sense that the mobile communication devices carried by the people walking in the city (with completely suspended information infrastructure right after large-scale disaster) can automatically receive real-time information and this information is shown on the offline maps in these mobile devices.

In the first year of this research project, the prototype of the iOS application for cooperative communication platform was developed. Using this prototype, experiments by hundreds of people carrying the mobile device were carried out. The experiment in the Ueno Zoo has proved that the information is properly spread among the people as expected by the simulation. The experiment in the Hiyoshi campus at Keio University has proved that the cooperative communication platform properly works for exteremely dense deployment of the mobile devices. In the second and the third year of this research project, the iOS application implementing the cooperative communication "te to te" has been released and a social experiment has been performed in the city of Kanazawa. At the same time, the patent for the fundamental part of the cooperative communication platform has been approved. In the last year of this research project, corresponding to the major update of the iOS, "te to te-MPC" has been developed. "te to te-MPC" is also equipped with the offline map.

As a result of this research project, the cooperative communication platform is almost ready for deployment in the real world. The next step of this research project is the more aggressive promotion of "te to te-MPC" for development of the cooperative communication platform in the real world.