Integration/Visualization of Data for Location, Physical Activity, and Landscape: An Application in a Field Study in Bangladesh

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Portable digital devices (such as mobile phones, PDA, GPS, accelerometer, digital pen, digital camera, or digital compass) are now widely used in our daily life. This phenomenon may be linked with the facts that the devices have become cheaper, smaller and more efficient. Researchers who collect data in field setting (e.g., anthropologists, geographer, ecologist, and regional scientists) have also come to utilize the devices. For example, GPS and digital compass are used for making base maps or to investigate an individual's behavioral pattern, while accelerometer is used for the evaluation of physical activity level of an individual. The problem for them is, however, each type of device has different format, which made the integration between different types of data difficult. In this study, we will report our attempts to integrate three different types of data that were collected by GPS, digital camera and accelerometer. Our automatic data integration system enabled the linkage of location data, physical activity data, and landscape data (each collected by GPS, accelerometer, and digital camera, respectively) on the basis of time when each data was collected. It has functions to allow users to monitor the process of data integration as well as the accuracy of the results. The system is also equipped with a tool that geographically visualizes integrated field data. As a case study, the prototype was used to integrate the data collected in a field survey conducted in Bangladesh in October 2010. We will discuss the future application of the system in field surveys.