A Space-Time GIS for Studying Individual-based Human Activities and Interactions

Shih-Lung Shaw

Department of Geography, University of Tennessee, Knoxville, USA
sshaw@utk.edu

Abstract

Human activities interact and intertwine to create a complex social system to fulfill our physiological, economic, social and other needs. Recent developments in information and communication technologies (ICT), such as the Internet and mobile phones, have offered people an environment to expand their activities from physical space to virtual space and have introduced important changes to human activity patterns. While transportation is used as the means to move people and goods in physical space, ICT serve as the navigation mode of carrying out activities in virtual space. With the use of ICT, people now can choose between physical space and virtual space to carry out their activities or combine physical and virtual activities to fulfill a particular project. These changes have important implications to both research and business communities. Combined with modern location-aware technologies, it now is feasible and affordable to track human activities and interactions at the individual level in both physical and virtual spaces. Such tracking data can be useful sources to enhance scientific research of better understanding human activity patterns as well as to develop new and innovative applications. This presentation will discuss how we can apply and extend the classical time geography concepts to study individual activities and interactions in a hybrid physical-virtual space. In addition, a space-time geographic information system will be presented to illustrate how we can represent, query, analyze, and visualize individual activities and interactions in a space-and-time context. Potential applications of this research also will be discussed in this presentation.

Keywords: human activity, time geography, temporal GIS