

GPS not just for driving but can be tool for crowd management

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Drivers around the world use the global positioning system (GPS) to figure out how to get from point A to point B. But a young Hebrew University of Jerusalem researcher has shown that GPS can also be applied commercially to better deal with crowd or shopper management and even to evaluating patient recovery following surgery.

How?

Michal Isaacson, a doctoral student working with Dr. Noam Shoval of the Geography Department at the Hebrew University, has been involved in developing new approaches to the use of advanced tracking technologies in order to provide valuable data collection and analysis for later study and application or even for on-the-spot, real-time application.

Her work has implications for understanding the activity of people in different settings, such as urban areas, shopping malls, theme parks, national parks and other tourist attractions. It has already been tested to evaluate crowd activity and flow at the Port Aventura theme park in Spain.

For her research, Isaacson has been named the first prize winner among students in this year's competition for the Kaye Innovation Awards at the Hebrew University. The prizes were presented on June 9 at the university's Board of Governors meeting. Her work in this field has resulted in a book that she coauthored together with Dr. Shoval and in several articles published in leading geographic journals. The first article

she coauthored and that was published in *The Professional Geographer* was noted by the journal as one of the top five most cited articles in 2006-2007.

The system she and Shoval have developed uses GPS technology to record the location of people for a designated period of time. During this period, participants are required to carry a small GPS unit with them. The tracking data is then analyzed, using a computerized, time/space analysis engine, to derive maps that indicate the volumes of activity throughout the location and charts that indicate how different types of populations spent their time in the location.

The data obtained using tracking technologies can also be analyzed in real time, creating virtual "radar" of the activity of visitors throughout a destination. Real time analysis can lead to dynamic management of attractions in a more efficient way, both enlarging the number of people that can visit an attraction within a given time frame and controlling their flow in a way that allows for the growth of sales and enlarged revenues. The analysis of this data can also change the way attractions are planned and can enable effective planning of future additions to an attraction.

The technology also has far-reaching medical applications. In collaboration with Dr. Yair Barzilay of the Hebrew University-Hadassah Medical School and the Orthopedic Surgery Unit at Hadassah University Hospital, a method was developed for detecting the mobility of patients after surgery as an objective measure for their follow-up recovery and well-being. The patients carry a [GPS unit](#) with them after the operation, tracking their movements, which are then analyzed. Future development will integrate additional sensors that will allow the combination of GPS data with physiological data, such as heart rate and blood pressure.

Provided by Hebrew University of Jerusalem

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