



Research Shows Using GPS Devices can be a ‘Draining’ Experience

Researchers in the College of Engineering were issued a U.S. patent last week that will extend battery life while using a GPS-enabled device.

TAMPA, Fla. (October 25, 2011) – Most of us know that GPS-enabled devices, such as cell phones, can pinpoint our location when the device is turned on and that pinpointing can have a lot of benefits. Lost hikers have been found; crime victims have been located; stolen property has been returned, because an application on that device was generating a locating signal every few seconds.

But most of us don't change location every few seconds and all that location reporting is draining your battery before you ever make a call or check an email. A group of researchers at the College of Engineering hopes a new patent will minimize that energy drain.

U.S. Patent No. 8,036,679 titled “Optimizing Performance of Location-Aware Applications Using State Machines” was issued October 11, 2011 to the inventors group that includes **Sean Barbeau**, CUTR research associate and Computer Science and Engineering PhD candidate; **Philip Winters**, Director of Transportation Demand Management Program at CUTR; **Rafael Perez**, computer science and engineering professor; **Miguel Labrador**, associate professor of computer science and engineering; and CUTR Senior Research Associate **Nevine Georggi**. While the patent was developed for the transportation world, it will have a lot of value elsewhere.

According to Winters, “When we track a cell phone, our mobile app on the cell phone listens to GPS satellites to determine the phone’s location as often as once every four seconds. We transportation geeks are more interested in where you travel to, how you get there (car, bus, bike, or walk), travel speed, delays, and what path or route you take than which room or even building you are in. When you arrive at work, for example, and stay there for several hours at a time, we really don’t need to track every few seconds.”

“We started working on this technology in 2003, before Google’s Android phones or Apple’s iPhone even existed,” says Labrador. “This is the first patent granted out of a total of 16 patents filed on related technology.” The patented software automatically recognizes that the phone is in the same approximate location (+/- 30 feet due to natural variations of GPS readings) and gradually increases the time between tracking from seconds to minutes.

Once the software recognizes you definitely moved outside that “point of interest” (e.g., home, work, store) by going outside the “fence” (a pre-determined radius around all those data points at your location), the listening frequency snaps back to the initial rate (e.g., every few seconds).

“All this listening consumes energy, draining your cell phone battery as well as giving us more data than we need, which uses a lot of bandwidth when sending the data to a server. Data overload is a real-issue for cell companies as well as consumers on limited data plans,” says Barbeau, the lead researcher on the project. “And from a transportation researcher’s perspective, if your battery drains too quickly, travel data will be lost if your phone dies before the end of the day.”

The group is beginning to see its efforts pay off. USF’s Division of Patents and Licensing recently signed a license agreement for the group’s technology with a local company.

“By using this invention, we can capture a high-definition snapshot of someone’s travel path without killing their phone’s battery, adds Barbeau. This revolutionary technology will create many new opportunities in the transportation research and telecommunications industries.”

If you want to learn more, click www.locationaware.usf.edu.

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