

Researchers find parking space solution in PocketParker

September 17 2014, by Nancy Owano



A California parking lot in 2006. Credit: Wikipedia/CC BY-SA 3.0

Looking for a parking spot? Circling round and round in a lot, feeling the heat of no luck no matter where you look? Could smartphone-tracking movements be of any help? Caleb Garling in MIT Technology Review on Monday pointed to researchers who have come up with pocketsourcing as a process that could turn smartphones into passive

sensors to track the location and movements of others who have installed the app.

The app uses the smartphone's accelerometer to determine where a user is and gauges whether that person is looking for a parking spot based on movements. If a driver goes slowly through a [parking lot](#) without stopping, that signals that the lot is full. If a driver shows movements typical of walking and then speeds up and leaves the lot, that indicates the person likely entered the car and drove away. Crunching [aggregate actions](#), a remote computer determines the likelihood that a lot has an available space. This is all the result of work by a team at the State University of New York at Buffalo; they built the app, called PocketParker. Parking lot data is pulled from [OpenStreetMap](#). The number of spaces is calculated in a lot based on its dimensions. For over a month, the app was tested on smartphone users in Buffalo involving 105 phones and 10,827 car arrivals and departures. Cameras were installed at the lots. The team found they were able to correctly predict how many spaces were available 19 out of 20 times.

The group is to present "PocketParker: Pocketsourcing Parking Lot Availability," by Anandatirtha Nandugudi, Taeyeon Ki, Carl Nuessle, and Geoffrey Challen on September 17 as part of the Cars and Driving session at the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2014) in Seattle.

The project team, describing the approach, said, "By observing transitions between walking and driving, we can identify parking and leaving events. We feed them into a model that incorporates the uncertainty caused by so-called hidden drivers—those not using our application—in order to predict the available capacity of each monitored lot. In comparison with many similar systems, we do not anticipate that a large fraction of [drivers](#) will use our application, and so must develop novel approaches to handle this uncertainty."

Challen, a professor in computer science and engineering at the State University of New York at Buffalo, according to MIT Technology Review, "doesn't envision PocketParker as a standalone app. Instead, it could be featured within a mapping app—similar to the way Google Maps integrates traffic data into its [app](#). Challen believes that if a feature like PocketParker were flipped on in the background, it would quickly collect enough data to make far better assumptions about parking spot availability."

More information: — "PocketParker: Pocketsourcing Parking Lot Availability" paper PDF is available via [ubicomp.org/ubicomp2014/attend ... g/program-papers.php](http://ubicomp.org/ubicomp2014/attend...g/program-papers.php)

— blue.cse.buffalo.edu/projects/pocketparker/

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