People as 'sensors': Twitter messages reveal NFL's big plays and fans'

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Using millions of Twitter subscribers as living "sensors," engineers from Rice University and Motorola Mobility have found a way to monitor fans' levels of excitement and to keep track of the action in National Football League (NFL) games -- without ever switching on a TV. SportSense is a computer program the engineers created to analyze NFL fan tweets in real time. The program can tell within seconds when touchdowns, interceptions and other big plays occur, and it can show how excited fans are about every game that's being played.

"People don't often think of themselves as being sensors, but each of us constantly senses and reacts to our environment," said SportSense co-creator Lin Zhong, associate professor of electrical and computer engineering and of computer science at Rice. "Thanks to social media sites like Twitter, it is now possible to capture those reactions -- for millions of people -- in real time. That's what SportSense does."

In collaboration with engineers from the Betaworks group at the Motorola Mobility Applied Research Center, Zhong and his students began creating software to monitor and analyze tweets in 2010.

"We chose football because touchdowns, interceptions and other events in the game cause a lot of excitement and lead a lot of people to tweet," Zhong said. "We found that a careful examination of the tweets could tell us what was happening in the game. The program can usually tell within 20 seconds when a big play like a touchdown occurs. Often, we see that even before it appears on the scrolling banners on ESPN and

other sites."

NFL fans' emotions and their team loyalties come through loud and clear in their tweets as well, so the software can also determine which team benefited from the big play.

For example, based on fans' tweets, the Detroit Lions' come-from-behind win over the Dallas Cowboys had the most excitement of all other games played last Sunday. The Detroit-Dallas game had 28 tweets a second on average for the whole game – more than nine times the total of the least-tweeted game.

The next most excitement was provided by the New York Jets-Baltimore Ravens (Sunday night football) and the San Francisco 49ers-Philadelphia Eagles games.

The least excitement was generated by the Tennessee Titans-Cleveland Browns and Miami Dolphins-San Diego Chargers games.

Recaps for all of the games can be found via www.sportsense.us.

SportSense will be analyzing games in real-time throughout the NFL season. To see it in action, visit sportsense.us while games are being played. Recaps of past games, including the 2010-2011 season, are also available.

When more than one game is being played, colored bars at the top of the page show how excited fans are about each game. When users click to "watch" a particular game, SportSense displays three graphs: one that shows the big plays and the overall excitement level of everyone watching the game and two others that highlight the excitement level of fans cheering for each team.

Zhong said the research team is interested in using the software to sense other things that are happening in the world.

"Anything with a sufficiently large audience has a similar potential," he said. "Things that are televised, like reality shows and political debates, are certainly possibilities.

"We're also interested in sensing things on a local scale. For example, when a storm hits and the power goes out in my neighborhood, I would like to know when it comes back on -- even if I happen to be at work. People tweet about those types of events, so the signal is there in the data; it's just a matter of finding it."

Provided by Rice University