

# Researchers say Twitter algorithm can predict movie profits

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Want to know how "Clash of the Titans" will fare at the box office this weekend? Check Twitter.

So say two Silicon Valley researchers who claim they have discovered a way to use the popular social media service to gauge real-time interest in movies and accurately predict how they will perform at the box office on opening weekend.

Sitaram Asur and Bernardo Huberman, two social computing scientists at HP Labs in Palo Alto, Calif., contend that computational methods using [Twitter](#) feeds can predict with as much as 97.3 percent accuracy how a movie will perform its first weekend of release.

That far surpasses the traditional survey-based "tracking" reports that studios have long relied upon to forecast movie ticket sales, or the popular online site Hollywood Stock Exchange that lets users wager box office predictions with pretend money.

The computer models based on Twitter chatter could signal a Merlin-like tool for Hollywood, which has long struggled to come up with fail-safe ways to figure out how movies will do at the box office. Among other things, the research could help studios decide whether to make last-minute tweaks to advertising campaigns, or scale back and cut their losses.

Although the studios can often predict some weekend box-office results within 10 percent, their results can fall short on films that target kids or teen fan boys, or are outliers like the recent Oscar winner, "The Blind Side."

The researchers used the rate at which movies are mentioned in Twitter updates to predict first-weekend box-office returns. The sentiment of the tweets -- positive, neutral or negative -- also accurately predicted second weekend, they said.

The research comes as movies' performance in the nearly \$11 billion box-office market, once of concern only to Hollywood insiders, has become a national pastime. It also comes as two trading firms, a Wall Street player and a Midwest upstart, are trying to roll out futures exchanges that they say are designed to help studios hedge box-office performance.

Huberman said the research shows that Twitter could be tapped to predict the outcome of all sorts of things, including how well major new products will be received and the outcome of major political races.

That could capture the elusive commercial potential of social media, that

services like Twitter with their vast flow of real-time information have the power and reach to track people's interests. Twitter, which has yet to demonstrate how it will translate its huge popularity into profits, will unveil a new advertising platform this month.

Hollywood has aggressively tapped social media as it becomes more important in influencing movie-going decisions.

"There's a lot of science that goes into this stuff even in red-neck Hollywood," said veteran Hollywood marketer Gordon Paddison.

Paddison released a report last fall that studied how 4,000 moviegoers use online resources to make their ticket-buying decisions. He found that while critics have little sway, social-media recommendations do.

Twitter and other social media services are more valuable to Hollywood in influencing sentiment than in predicting it, Paddison said. Twitter's influence is also limited because its audience trends younger and hipper, without tapping other groups that drive a film's popularity.

"Are there enough hardcore Christians on Twitter to predict that the 'Passion of the Christ' will be a \$400 million film?" Paddison asked. "If so, then studios would be highly interested."

Hollywood studios spend millions annually on marketing research, including test screenings (where invited audiences, shown films often months before their premieres, not only give the movies numerical scores but also say what scenes and characters they did and didn't like) and telephone and online surveys.

The latter data, which is compiled and reported by several different firms, can give studios insight into what segments of an audience are interested in a given film, and a usually reliable estimate of how well the

film may or may not in its premiere weekend.

While these so-called tracking surveys are sometimes far off the mark, particularly for movies catering to children and teenage fan boys, they most often carry a margin of error of about 10 percent.

Whether [social media](#) can deliver returns at the box office remains to be seen.

"Twitter is a reflection of what people are talking about," said one studio marketing head, who was unacquainted with the HP Labs researchers' claims and requested anonymity. "Nobody has figured out how to harness it yet, and the tools that exist to monitor it so far seem wonky and unreliable."

The [HP Labs](#) study analyzed nearly 3 million Twitter updates that mentioned 24 major releases -- "Alice in Wonderland," "Avatar" and "Twilight: New Moon" -- over the course of three months. By factoring in the date of a movie's release and the number of theaters where it appeared, the researchers predicted opening weekend box-office performance with 97.3 percent accuracy. They developed a system to evaluate the sentiment of Twitter updates -- positive, neutral or negative -- to predict the following weekend's returns with 94 percent accuracy.

For example: The researchers' Twitter-based methodology predicted "Dear John" would garner \$30.71 million at the box office on opening weekend. It pulled in \$30.46 million. And for "The Crazies," the methodology predicted \$16.8 million, and it earned \$16.07 million on opening weekend.

The researchers are applying for a patent for the methodology they used. They say don't have any plans yet to commercialize it, but are presenting their findings at Web intelligence conference in Toronto in August.

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