Researcher presents latest work on tracking ideas in social media

February 19 2012

Indiana University's Filippo Menczer has shown how to "out" political astroturfers through his complex networks laboratory's study of information diffusion on Twitter. The research team went on to learn that while retweet networks are politically segregated between left- and right-leaners, Twitter "mentions" actually create a communication bridge between the two partisan groups.

Now the Truthy team has added new features for analyzing political social media that includes the capability for citizens to interact with the data and then explore the impact, partisanship and sentiment of the users involved in the diffusion of a meme. New tools on the Truthy website also allow visitors to see the location of users involved in information movement, and permit them to download tweets of interest from Twitter and generate videos of actual meme diffusion as it occurs.

Menczer, a professor of computer science and informatics, unveiled the new tools today during a panel discussion titled "Web Surveillance: Fighting Terrorism and Infectious Diseases" and presented during the annual meeting of the American Association for the Advancement of Science. The title of his presentation was "Tracking the Diffusion of Ideas in Social Media."

This latest news from IU's Center for Complex Networks and Systems Research, of which Menczer is director, also introduced evidence that scientists can now reproduce the incredible diversity of popular and persistent (and the unpopular and fading) nuggets of information in

social networks without assuming that some ideas are better than others.

Focused on the advancement of Web surveillance methodologies developed in the fields of information management, global [information science](link), linguistic ontology, complex networks and epidemiology, and on the tools used by the lab -- innovative Web mining algorithms, space-time analysis, user-generated content and social networks -- the symposium highlighted new directions in research on information dynamics.

"One domain of particular interest is that of politics. Social media platforms play an important role in shaping political discourse in the U.S. and around the world," Menczer said. "Our infrastructure allows us to mine a large stream of social media data related to political themes, and this analysis addresses polarization, cross-ideological communication and partisan asymmetries in the online political activities of social media users."

Before the 2010 U.S. mid-term elections, Menczer and others at IU's School of Informatics and Computing unveiled Truthy, a sophisticated Twitter-based research tool that combined data mining, social network analysis and crowdsourcing to successfully uncover deceptive tactics and misinformation leading up to the elections. The work received international attention, including coverage in the Wall Street Journal, Science, The Atlantic, National Public Radio, the Australian and Canadian Broadcasting Systems, Spain's El Pais and Italy's La Repubblica.

"We are now able to introduce a model of the competition for attention in social media, and from this a dynamic process of information diffusion emerges where a few ideas go viral, but most do not," Menczer said. "We now know it is possible that the relative popularity of different topics, the diversity of information to which we are exposed, and the

fading of our collective interests for specific memes all derive from a combination between the competition for limited attention and the structure of social networks. Surprisingly, one can reproduce the massive heterogeneity in the popularity and persistence of ideas without the need to assume different intrinsic values among those ideas."

The team matches real-time, streaming Twitter data against keywords to exclude tweets unlikely to contain political discussion and then extracts memes like mentions, hashtags and URLs. Memes of interest are isolated by considering only those that account for a significant portion of the total volume. Memes are then inserted in a database, tracked, analyzed and visualized to obtain more information on each one.

Diffusion movies of political memes can be found and shared on the team's YouTube site and on the research team's Truthy website.

Provided by Indiana University