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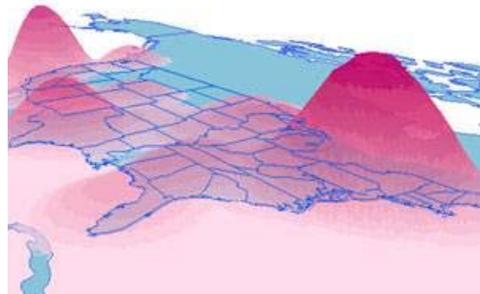
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Wednesday, October 6, 2010

Mapping Cyberspace

A \$1.3M National Science Foundation grant will create ways to track the spread of information and ideas on the web.

Story Highlights

- Tracking terrorist ideas online
- Diffusion of information
- Understanding 'collective thinking'

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By Gina Jacobs

A \$1.3 million grant from the National Science Foundation will help SDSU researchers create new ways to analyze the spread of information and ideas on the Internet.

"The spread of ideas in the age of the Internet is a double-edged sword; it can enhance our collective welfare, as well as produce forces that can destabilize the world," said Ming-Hsiang Tsou, associate professor of geography and the project's lead investigator.

The project seeks to map both the geography and the chronology of ideas over cyberspace, as the ripples of information radiate outward from a given event epicenter.

By mapping and analyzing such ripples, researchers hope to better understand the role of new media in biasing, accelerating, impeding or otherwise influencing personal, social and political uses of such information.

Tracking terrorist ideas online

One application of the project will be to track terrorist and extremist ideas on the web to see where the information originates and how it spreads.

"This singular announcement by a solitary person touched off violent protests that took the lives of many and threatened further escalation of tensions and rifts between the West and the Islamic

MULTIMEDIA



1936 Mural Finds New Home in SDSU Library Wednesday, October 20, 2010 Thursday, October 21, 2010

SDSU anthropology professor Seth Mallios describes a nearly 80-year-old mural rediscovered in Hardy Tower that was unveiled, Oct. 5, in the SDSU Library.

This video requires Adobe Flash Player.

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world,” said Dipak Gupta, co-investigator on the project and professor of **international security and conflict resolution**.

“This episode illustrates the potential of relatively isolated events for destabilizing the world in unforeseen ways and with far-reaching consequences.”

By identifying the path of information online, researchers hope to learn what makes a place more prone to the spread of any particular idea. In addition to terrorist ideas, the project also seeks to establish ways to map the spread of information on other ongoing topics, such as epidemics and global climate change, and other event-based topics, such as wildfires, earthquakes and hurricanes.

Diffusion of information

“Understanding information diffusion and acquisition—e.g., searching, sending—patterns in response to such disasters and epidemics may significantly facilitate intervention responses, and eventually, prevention responses,” Tsou said.

The first phase of the project will develop basic language analysis tools creating semantic maps—words, phrases and patterns of language use—which characterize the seed sites in the spread of ideas.

Using these maps to guide web searches will provide a detailed picture of how seed sites are reporting an event. By using this linguistic framework, a sophisticated web search will indicate how these seed sites and their social networks of users are reporting an event and influencing each other.

In the second phase of the project, researchers will collect data on the spread of words, phrases and patterns of language use on websites over time and space. By mapping these sites on a world map, visualization will show how the ideas are spreading.

In the third phase of the project, statistical analyses will seek to understand the reasons for a particular course along which an idea spreads. In other words, potential factors that cause “susceptibility” to and “immunity” from a particular set of ideas will be identified. This project will continue for four years, collecting and analyzing data, and developing a theoretical structure on the spread of ideas.

Understanding 'collective thinking'

“This project will help us to better understand the ‘collective thinking’ of human beings and minimize misunderstandings between different groups and people,” Tsou said.

Mapping Cyberspace to Realspace: Visualizing and Understanding Spatiotemporal Dynamics of Global Diffusion of Ideas and the Semantic Web was funded for four years starting Oct. 1.

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