April 4, 2019

**Jiliang Tang will use an NSF CAREER Award to improve the analytics of social networks**

When users “like” favorite followers or “block” unwanted messages on today’s social media networks, the magnitude of those positive and negative clicks are creating significant challenges to traditional network analysis.

**Jiliang Tang**, an assistant professor of computer science and engineering at Michigan State University, will use a National Science Foundation Faculty Early Career Development (CAREER) Award to improve the performance of network analytical tools. The five-year $507,700 grant began in March 2019.

“In today’s social systems, relations between people can be positive but also negative in terms of blocked and unfriended users,” Tang explained. “Networks end up with both positive and negative links, something we call signed networks.

“These networks have substantially different properties and principles from unsigned ones, which poses tremendous challenges to traditional network analysis,” he continued. “This project will enable the analysis of networks with negative links and various data-information areas. The new algorithms will assist in more comprehensive modeling, measuring and mining.”

Tang said today’s online social activities have become an integral part of life.

“Negative links can play an important role in filtering or even blocking unhealthy interactions and content, which is the key to establish trust among users or even between users and online systems,” he said. “The project can help maintain healthy, trustworthy and reliable online social worlds.”
Tang said systems beyond social systems can be modeled as signed networks, such as positive and negative interactions among genes in biology, synergistic and antagonistic drugs in healthcare, and even symbiotic and competitive animals in the ecosystem.

“Thus, the project has the potential to broadly impact important applications in various disciplines such as social science, health informatics, and bioinformatics,” he added.

Tang is the director of MSU's Data Science and Engineering (DSE) Lab. The lab focuses on developing mining, learning and optimization algorithms to glean actionable data patterns from dynamic, multi-dimensional, attributed, signed and high-order graphs that have become universal representations of complex data. For updates, visit: MSU DSE Lab.

Tang came to MSU in August 2016 after serving as a research scientist for Yahoo. He received a bachelor’s degree (2008) in software engineering and master’s degree (2010) in computer science from the Beijing Institute of Technology, and a doctorate (2015) from Arizona State University in computer science.

His awards include the Best Student Paper Award in Web Search and Data Mining - 2018 and the Best Paper Award in Knowledge, Discovery and Data Mining (KDD) - 2016. His dissertation won the Dean Dissertation Award and was runner up of the KDD Best Dissertation Award, which is the prestigious worldwide award recognizing new PhD graduates in the field of data science.

Tang is the 18th faculty member in the College of Engineering to receive an NSF CAREER Award since 2010. NSF CAREER Awards support junior faculty who exemplify the role of teacher-scholars through outstanding research and education. It is among NSF’s most prestigious honors.

Read the NSF abstract.

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