



Social Media is a promising new frontier for insights into large-scale medical and treatment patterns thanks to Indiana University's School of Informatics and Computing

Insights into large-scale medical and treatment patterns as expert in biomedical networks partners with Persistent Systems for big data analysis, insights and visualization

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News

The world of clinical trials just got a whole lot bigger thanks to pioneering work by a team of scientists from Indiana University's School of Informatics and Computing. The Complex Adaptive Systems and Computational Intelligence (CASCI) group partnered with [Persistent Systems](#), a world leader in large-scale [software-driven healthcare solutions](#), to develop sophisticated algorithms to analyze the connection between medicine and social behavior in health issues, particularly how they are discussed across social media. Combining the tools of Big Data analysis and visualization with the vast amounts of data generated by social media, this group has started to tackle new areas of health research at a scale never before seen.

Professor Luis Rocha, Director, Complex Networks & Systems Ph.D. Program, CASCI Principal Investigator, School of Informatics and Computing, Indiana University

"We try to find the commonality between biological, social, and technological networks, and the Internet. Previous studies—whether in hospitals or by sociologists—could handle only 20, 30 or 40 patients in a study. Software is now driving our research, so through social media we can plug into millions and millions of people worldwide with very different types of conditions. This helps us tap into the psychological and social elements of healthcare, making this a major game changer."

Watch the full video with Professor Rocha [describing the CASCI solution here](#).

For example, in looking at the analysis of depression, millions of posts are first analyzed based on defined hashtags with the relevant drug names across social media channels such as Instagram, Facebook, or Twitter. The algorithms developed find connections on how drugs interact with each other, and how people are describing them, also looking for clusters of symptoms at a scale not previously possible. Identifying and validating new clusters of drugs, natural products and symptoms can act as an early warning system for adverse drug effects and interactions.

The methodology also allows the study of multiple health issues with distinct social attitudes, such as depression and epilepsy, or drill down at the community differences between Twitter and Instagram. Another goal is to allow health specialists to visualize and interact with the data in three dimensions,



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allowing them to study cohort and individual behaviors in much detail in a virtual reality setting. “We build knowledge networks from what people are talking about on their public timelines. This enable us to visually graph and inspect how different drugs, symptoms and even natural products are connected to each other”, says **Rion Brattig Correia**, a CASCI doctoral student in the School of Informatics and Computing at IU Bloomington, who is developing this computational social science analysis with Prof. Rocha.

The work at CASCI is one of many transformative digital healthcare solutions Persistent has worked on around the world, reflecting the huge opportunity to use Big Data and software-driven environments to reshape doctor/patient interaction. Frequently working at the forefront of academic research around sophisticated network analysis, Persistent’s other partnerships include [Virginia Tech’s Biocomplexity Institute](#) and [Hackensack University Medical Center](#).

Quote from Dr. Sid Chatterjee, Persistent Systems Chief Technology Officer

“Using data—smart data—is how we transform to being software-driven. This is precisely what CNetS has achieved: utilizing massive amounts of new but unstructured sources of data and making sense of the patterns. Tapping into the scale of social networks offers an incredible source of consumer and patient data, opening up a whole new type of software-driven solution.”

About CASCI

The [Complex Adaptive Systems and Computational Intelligence](#) (CASCI) group at Indiana University works on complex networks & systems and their applications to informatics, biology, health, and social systems. It is affiliated with the [Center for Complex Networks and Systems Research](#) at the [School of Informatics and Computing](#), as well as the [Indiana University Network Science Institute](#) (IUNI). IUNI unites 100+ researchers at IU, building on their world-renowned multidisciplinary expertise toward further scientific understanding of the complex networked systems of our world. Through pioneering new approaches in mapping, representing, visualizing, modeling, and analyzing diverse complex networks across levels and disciplines, IUNI is laying the groundwork for innovative research and discovery in the area of network science.

About Persistent Systems

Persistent Systems (BSE & NSE: PERSISTENT) builds software that drives the business of our customers; enterprises and software product companies with software at the core of their digital transformation. For risks and uncertainties relating to forward-looking statements, [please click here](#).

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