

Using Friends as Sensors to Detect Planetary-Scale Contagious Outbreaks

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Recent research has focused on the monitoring of planetary-scale online data for improved detection of flu outbreaks, global mood patterns, movements in the stock market, political revolutions, and many other important phenomena. However, none of these methods take advantage of the network structure in these data sources to identify key nodes, and increasingly the amount of data available online exceeds our capacity to monitor it in real time. Here, we develop a model of the contagious spread of information in a large-scale publicly-articulated social network and show that a simple method can yield not just early detection, but advance warning of contagious outbreaks.