

ABSTRACT

The importance of social media-borne influence has been demonstrated in dramatic fashion on a global stage, with examples ranging from the regime toppling Arab Spring between 2010 and 2012, to the startling ascendancy of ISIL in 2014. The value of this influence however, is highly versatile in application, and not limited to geopolitics. Commercial marketing campaigns hinge on the propagation of their message through social networks, and social media influence practitioners have engineered methods of ensuring optimal results. This practice however, is often conducted solely in a virtual environment, where false positives can abound due to disconnection from geospatial ground truths. I have outlined a system to reduce network uncertainty and identify key influencers in a manner that improves upon existing analytic processes by geospatially decomposing nebulous social media networks into locally relevant networks, wherein tangible results are more likely. This study introduces a novel approach, demonstrating that position in a social network has bearing on an individual's relationship with others in physical space, and as a result, individuals or organizations postured to influence a network via direct conduits such as local leadership figures and on-site organizers, possess a qualitative advantage. Additionally, because there exists a reciprocal relationship between an individual's position in a social network and their position among others in physical space, geospatial assessment techniques can be used to infer social connections. Dubbed endemic socio-spatial latent variable modeling (ESSLVM), this method has been automated as a Python tool that can be integrated into ArcGIS. Concepts are demonstrated using a Twitter dataset from the late-November 2014 protests in Ferguson, Missouri.