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Detecting Fake News on Social Media by Message Diffusion Pathways

-Background Classification of social media content is often regarded as a text categorization problem and mainly focuses on content features, such as words and hashtags. However, for many emerging applications like fake news and rumor detection, it is very challenging, if not impossible, to identify useful features based on message content. A key driving force behind the diffusion of information relates to the fact that individuals tend to spread information that caters to their interests and/or beliefs. Hence, similar messages usually lead to similar traces of information diffusion as they are more likely to be spread from similar sources, by similar people, and in similar patterns. Since diffusion information is readily available on social networks, an opportunity exists for its use in combating fake news. Invention Description Researchers at Arizona State University have developed a novel method to detect fake news in social media messages through the use of an end-to-end model based on LSTM RNNs (long short-term memory recurrent neural networks) to represent and classify propagation pathways of messages. An embedding process captures both social proximity and community structures associated with social media users. Experimental results with real-world datasets show that the method effectively classifies social media messages and is especially useful when content information is insufficient. This innovation is covered in U.S. Patent Application [US16/435,064](#). Potential Applications • Fake news detection • Social media content verification Benefits and Advantages • Provides a high degree of accuracy even without content information • Scalable with optimization that can be readily parallelized through open-source software libraries Related Publication: [Tracing Fake-News Footprints: Characterizing Social Media Messages by How They Propagate \(PDF\)](#) [Faculty Profile of Professor Huan Liu](#)

