

Abstract

Southern Illinois is located at the crossroads of two Total Solar Eclipse (TSE) events in 2017 and 2024. In 2017, a record high number of spectators visited the region and viewed the phenomenal natural event. The sudden influx of out-of-town visitors brought in revenues and other economic opportunities to rural cities and towns, but posed pressure to the serving capacities of local infrastructures and businesses. Accurate accounts of human dynamics, such as when they arrived and left, where they stayed, ate and shopped, and what they experienced, will help the region be better prepared for the 2024 TSE. Therefore, it is imperative to understand human dynamics and develop strategies for better serving the TSE tourists. The objective of this research is to understand the spatiotemporal patterns of crowd traffic and their touring experience during the 2017 TSE using a social sensing approach, and to develop data-driven planning strategies for the 2024 TSE. We will use Twitter data archives that have been widely used for tracking human mobility in major metropolitans. The geolocations, time stamps, and contents associated with each tweet will be extracted and analyzed using machine learning algorithms to represent the movement, popular topics, and sentiments of the visitors. A group of undergraduate students will contact local governmental officials, businesses, and residents to verify the accuracy of the results, and develop strategies of improving the region's TSE-serving capacities. The project is expected to benefit undergraduate and graduate students on applying 'big data' and machine learning techniques to community and regional planning.