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Localization of Geospatial Events and Hoax Prediction in the UFO Database

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Abstract : Unidentified Flying Objects (UFOs) have been an interesting topic for most enthusiasts and hence people all over the United States report such findings online at the National UFO Report Center (NUFORC). Some of these reports are a hoax and among those that seem legitimate, our task is not to establish that these events confirm that they indeed are events related to flying objects from aliens in outer space. Rather, we intend to identify if the report was a hoax as was identified by the UFO database team with their existing curation criterion. However, the database provides a wealth of information that can be exploited to provide various analyses and insights such as social reporting, identifying real-time spatial events and much more. We perform analysis to localize these time-series geospatial events and correlate with known real-time events. This paper does not confirm any legitimacy of alien activity, but rather attempts to gather information from likely legitimate reports of UFOs by studying the online reports. These events happen in geospatial clusters and also are time-based. We look at cluster density and data visualization to search the space of various cluster realizations to decide best probable clusters that provide us information about the proximity of such activity. A random forest classifier is also presented that is used to identify true events and hoax events, using the best possible features available such as region, week, time-period and duration. Lastly, we show the performance of the scheme on various days and correlate with real-time events where one of the UFO reports strongly correlates to a missile test conducted in the United States.

Keywords : time-series clustering, feature extraction, hoax prediction, geospatial events
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