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VAST2015 Challenge Two: Event Analysis from Communication Data

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ABSTRACT

Social Media is a very good example of a large communication network. Typically, most data generated by social media are embedded with spatiotemporal stamps which hold crucial information than can help law enforcement agencies analyze the intensity of a calamity or chaos. Currently, not much research is done in designing a visual analytics system that incorporates clustering methods to analyze communication patterns. This research seeks to develop an analysis tool that represents such diverse data sets in user-friendly visual forms, to provide insights into the data that will improve the efficiency of event analysis. To analyze this data we have employed a community detection algorithm that will help us group people together who exhibit similar behavior. To visualize these clusters and the relationships between each cluster we have used a force-directed graph which will help law enforcement officials interpret communication patterns and discover suspicious ones. Each cluster in the graph is colored distinctly and a list is also provided to display the people arranged in descending order of their communication frequencies with other people in the same cluster. This visualization allows users to find the most influential people in a group/cluster. The tool designed has been used to analyze the VAST 2015 Mini-Challenge 2 Data Set in order to detect some suspicious groups of individuals. Although this tool has been currently designed to analyze the VAST 2015 datasets, it can easily be modified to visualize other data sets such as twitter or any other similar social media source.

KEYWORDS

Visual Analytics, VAST2015 Challenge, Communications, Community Detection.