



Contribution ID : 61

Type : **Contribution in Organized Session**

Mapping cyber-attacks through keyword co-occurrence networks in hospital settings

martedì 2 maggio 2023 17:30 (15)

When critical national infrastructure like hospitals is under cyber-attack, it threatens safety and wellbeing of individuals as demonstrated by WannaCry. To understand vulnerabilities of the healthcare sector and how the sector can take steps to prevent attack, it is important to understand how cyber threats have evolved by looking at the nature of attacks. Through the analysis of news articles, attacks that have become more prevalent requiring action plans can be uncovered. News analysis also helps in understanding the extent to which cyber attacks are localised. Using GDELT (Global Data on Event, Location and Tone), this paper aims to create a keyword co-occurrence network and through a combination of Natural Language Processing and Machine Learning map the temporal evolution of global cyber-attacks. This paper thus creates knowledge maps for uncovering meaningful knowledge components to improve comprehension of cyber attack evolution based on patterns between keywords that emerge in the news. Combining this data with hospital attributes and location, this will be enable deciding on the first key step in determining what cyber defences would be required and how policy interventions can be developed to help improve the cyber security of Critical National Infrastructures.

Keywords

GDELT, news analysis, keyword co-occurrence, cybersecurity, critical national infrastructures

Topics

- Network analysis for security and cybersecurity

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Session Classification : Social cybersecurity: convergence of SNA in cyber

Track Classification : Social cybersecurity: convergence of SNA (Social Network Analysis) in cyber