

Info-symbiotic Social Media Analytics for Human Security

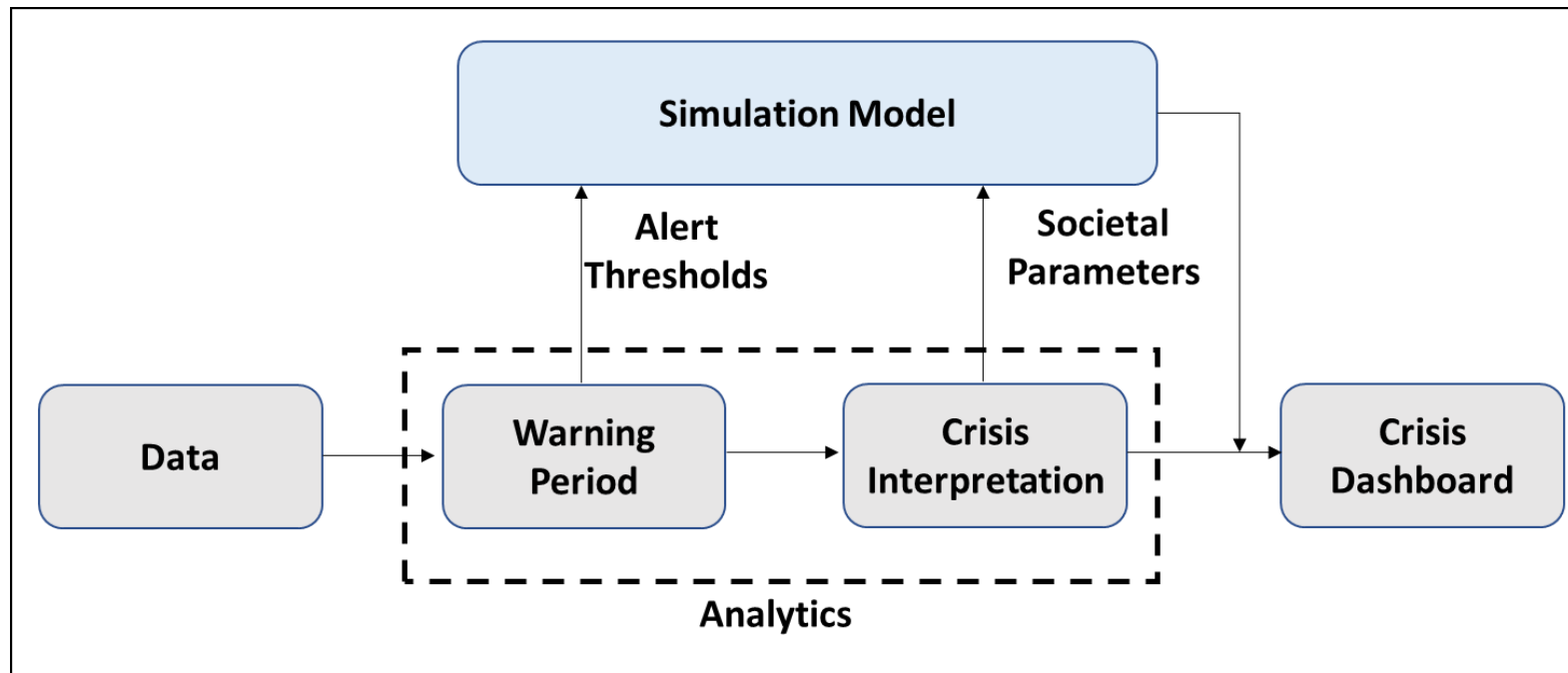
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Aim and Scope

We propose an info-symbiotic data analytics framework for human security that can be used as a decision support tool to analyse information dissemination through social media, predict the onset of escalating crisis situations, and prevent or mitigate both the onset and the impact.



The Analytics Framework

- **Warning Period**

- **Alert Mechanism**

This mechanism is aimed at spotting crucial outbreaks by detecting tipping points, when society is heading towards a point of no return.

- **Crisis Interpretation**

- **Web Insights**

The web insights process analyses the information of those web resources that have been added to reinforce the ideas embodied in a post.

- **Radical Behaviour**

This process spots instability scenarios based on the Human Security spectrum and extract, detect and interpret dissimilar behavioural patterns that outline radical behavioural traits for National Security.

- **Ideology**

The analysis of ideology provides valuable insights to identify two main elements: Authoritarianism and Hostility.

Real world examples

The robustness and effectiveness of our approach have been tested on different real-world events related to disruptive activity and health emergencies such as the COVID pandemic.

ANALYSING TWO COVID-19 DISRUPTIVE EVENTS

MICHIGAN

A convoy of thousands of motorists drove from all over the state to protest the governor's stay-at-home order's extension.

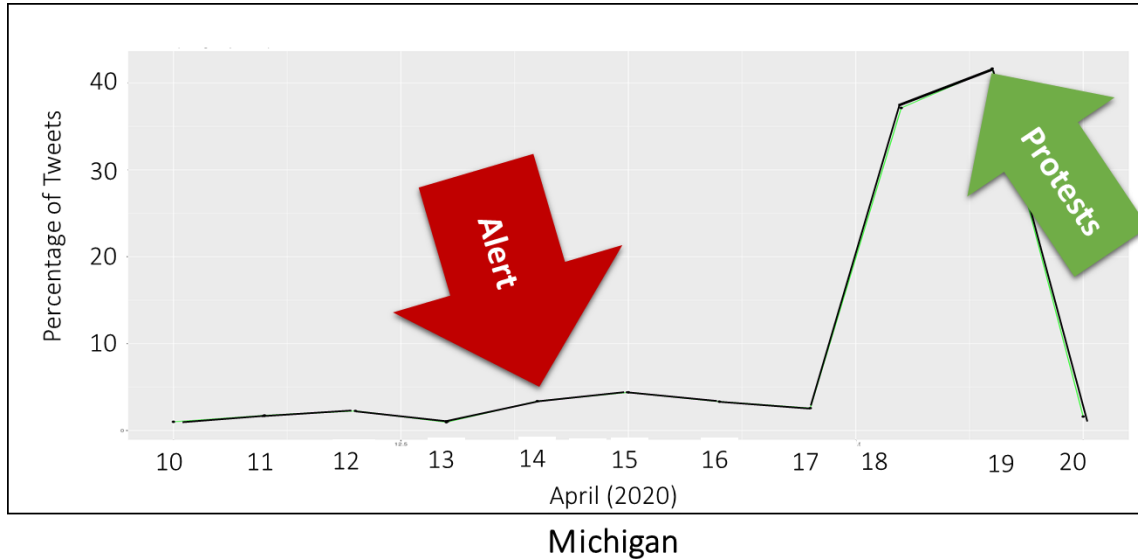


TEXAS

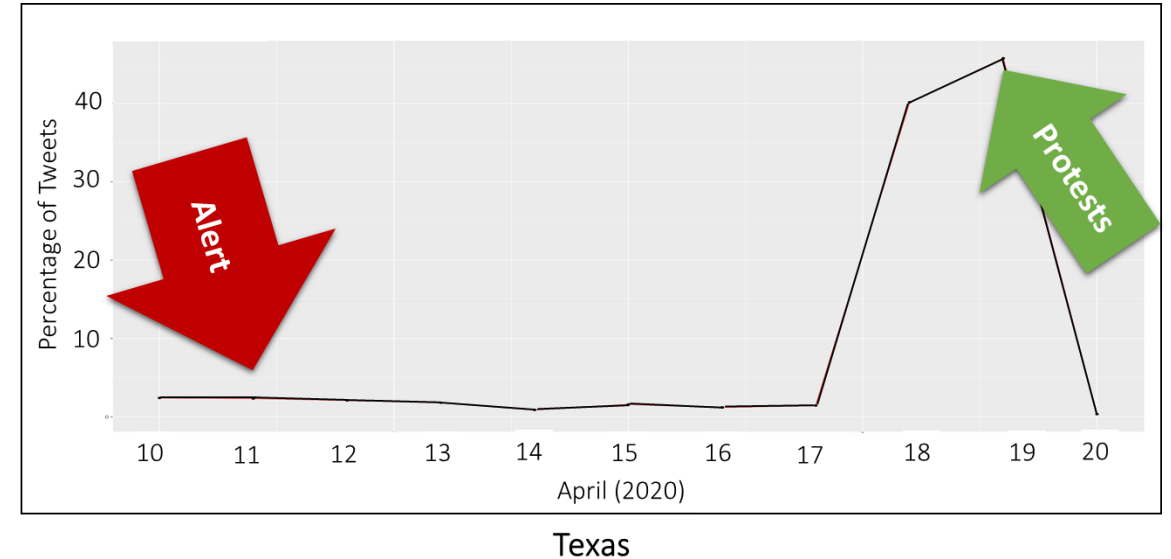
Rallies were organised to show disagreement against local restriction measures, where people demanded to reopen economies.



Real world examples



| Date (April 2020) | Disruptive Expression/Concerns |
|-------------------|---|
| 15 | Violate -> Lockdown; Disagree -> Curfew |
| 17 | Take -> Streets; Protest -> Michigan |
| 18 | Cancel -> Lockdown; Protest -> Lockdown |
| 19 | Break -> Curfew; Want -> Cure |



| Date (April 2020) | Disruptive Expression/Concerns |
|-------------------|---|
| 11 | Lift -> Quarantine; Reopen -> Texas |
| 17 | Reopen -> Government; Close -> Schools |
| 18 | Wear -> Facemask; Authorizing -> Reopen |
| 19 | Open -> Quarantine; Violate -> Lockdown |

Further Reading

- Pedro Cardenas , Nikos Tziritas,Re Georgios Theodoropoulos, “Info-Symbiotic Systems for Global Governance: National Security and Pandemics”, Handbook of Dynamic Data Driven Applications Systems, Vol II, Springer.
- Pedro Cardenas Canto, Georgios Theodoropoulos, Boguslaw Obara, Ibad Kureshi and Ioannis Ivrisimtzis, “Big Data for National Security in the Era of COVID-19”, The International Conference on Computational Science, ICCS2021, Krakow, Poland, 16-18 June, 2021.
- Pedro Cardenas-Canto, Georgios Theodoropoulos, Boguslaw Obara, Ibad Kureshi, “Unveiling Ideological Trends Through Data Analytics to Construe National Security Instabilities”, IEEE International Conference on Big Data 2020 (IEEE BigData 2020), Deviant Activities on Social Media, December 10-13, 2020.
- Pedro Cardenas-Canto, Boguslaw Obara, Ibad Kureshi, Georgios Theodoropoulos, “Analysing Social Media as a Hybrid Tool to Detect and Interpret likely Radical Behavioural Traits for National Security”, 2019 IEEE International Conference on Big Data (IEEE BigData 2019), 3rd Workshop on Human-in-the-loop Methods and Human-Machine Collaboration in BigData, Los Angeles, USA, Dec 9-12, 2019, DOI Bookmark: 10.1109/BigData47090.2019.9006259
- P. Cárdenas, G. Theodoropoulos and B. Obara, "Web Insights for National Security: Analysing Participative Online Activity to Interpret Crises," 2019 IEEE 18th International Conference on Cognitive Informatics & Cognitive Computing (ICCI*CC), Milan, Italy, 2019, pp. 235-243, DOI Bookmark: 10.1109/ICCI*CC46617.2019.9146090.
- Pedro Cardenas-Canto, Boguslaw Obara, Ibad Kureshi, Georgios Theodoropoulos, “Defining an Alert Mechanism for Detecting likely threats to National Security”, 2018 IEEE International Conference on Big Data (IEEE BigData 2018), Seattle, WA, USA, Dec 10-13, 2018. DOI Bookmark: 10.1109/BigData.2018.8622569.
- Pedro Cardenas-Canto, Georgios Theodoropoulos, Boguslaw Obara, Ibad Kureshi, “A Conceptual Framework for Social Movements Analytics for National Security” International Conference on Computational Science (ICCS 2018), Wuxi, China, 11-13 June, 2018. Shi Y. et al. (eds) Computational Science – ICCS 2018. ICCS 2018. Lecture Notes in Computer Science, vol 10860. Springer, DOI Bookmark: 10.1007/978-3-319-93698-7_23

Consortium

- **UK**
 - University of Birmingham
- **Greece**
 - University of Thessaly, Greece
- **International partner: China**
 - The Southern University of Science and Technology, Shenzhen , China.

We are open to collaboration with other institutes.

Thank You!

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