



TUTORIAL:

Trust and reliability of social data for crisis management and analysis

**19th International Conference on
Information Systems for Crisis Response and Management**

Workshops and Tutorial - May 22nd, 2022

Main Conference – May 23nd – 25th, 2022

Tarbes, FRANCE

<https://iscram2022.enit.fr/>



PLEASE CHARACTERIZE YOUR PROPOSAL:

Characteristics	Your Choice
Workshop or Tutorial	Tutorial
<p>Possible Formats:</p> <ul style="list-style-type: none"> • Hands-on session; • Panels, posters or presentations with active interactions with attendees; • Practitioner-researcher task co-design and validation session; • Personalized rapid prototyping and evaluation with the help of practitioners; • Software tutorials and demos; • Dialogue between practitioners and researchers on specific topics, focused on the information needs of responders in various scenarios; • Research grant accountability and practical research impact. 	<ul style="list-style-type: none"> • Dialogue between practitioners and researchers on specific topics, focused on the information needs of responders in various scenarios;
<p>Possible Topics:</p> <ul style="list-style-type: none"> • Cross-border crisis management; • Agent-based modeling; • Multi-modeling / Model coupling / Hybrid modeling for crisis management; • Modeling human behaviors; • Innovative Tools and Technologies for Crisis Management (Virtual Reality, machine learning, etc.); • Participatory Design, Open Innovation, Agile Methods for design; • Resilience of systems; • Explicability and transparency of crisis management solutions: trust, acceptability, accountability; • Ethics in crisis management; • Other 	<ul style="list-style-type: none"> • Explicability and transparency of crisis management solutions: trust, acceptability, accountability; • Other

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INTRODUCTION TO THE WORKSHOP/TUTORIAL

This tutorial investigates several issues of using social data analysis in critical situations, and focuses on two critical notions: trust and reliability. Social data is understood as information collected from social media including various networks and platforms that show what online users publish on those platforms but also how they share contents or engage with other users. Although there are many significant benefits associated with social media platforms, certain characteristics can lead to a dangerous social environment. During crisis events, when information integrity is of the utmost importance to the safety and well-being of affected citizens, rumors and false flags can produce disinformation, misinformation and misled online and offline users worldwide. In addition, it also threatens the reliability of social media use for emergency and risk communications. “Can we trust online data” is the main question to be addressed when exploring social media as a resource for crisis management. More specifically, two research questions will be answered in this tutorial: Q1: Can machine-learning algorithms accurately predict the veracity of online contents? and Q2: Can online data always be used as a reliable resource for crisis management or analysis ? These questions are motivated by the practical need for more efficient methods to monitor the quality of online data before using data as input for decision-making procedures. In order to answer these questions, we have conducted a literature survey illustrating several critical aspects of practical use of social data during crises. The tutorial will be structured in three main chapters described hereafter. The first chapter is entitled “Trust and reliability in the cyberspace” and investigates the notions of trust and reliability for artefacts in the cyberspace, ranging from information items to sources to more sophisticated structures such as virtual communities. The chapter shows that trust may be diminished in spite of the tremendous volume of information and that the cyberspace is prone to phenomena causing harm to data completeness and credibility, such as information filtering, echo chambers, bubble filters.

The second chapter investigates the nature of social data, asking the question of whether social data conveys factual and useful pieces of information or rather subjective content in the form of personal opinions, beliefs and impressions. The discussion is based on three illustrations of social data analysis. The first one is a study conducted to analyze the spread of fake news in the aftermath of Boston marathon bombing, the second tackles the analysis of subjectivity underlying the propagation of concepts related to extremist ideologies (far right extremism, white supremacy, etc.) in the cyberspace and the last one discusses issues of influence detection during elections.

The last chapter concludes the tutorial and presents a walk-through of several ongoing projects and initiatives addressing the many facets of social data analysis for crisis management.

TOPICS

trust, reliability, misinformation, factual and subjective content, uncertainty of online data

PRESENTERS' RECRUITMENT

The tutorial gathers contributions from several ongoing projects and communities: FLYER¹ is a national project funded by the French Research Agency and dedicated to the development of hybrid artificial intelligence methods for social data analysis; LEMON² is a coordination action funded by the French Council for Scientific Research to investigate the nature and spread of extremist contents on social platforms. ETUR³ (Evaluation of Techniques for Uncertainty Representations) is a working group supported by the International Society for Information Fusion to explore uncertainties arising when combining various data types and

¹ <https://anr.fr/Projet-ANR-19-ASTR-0012>

² <https://www.madics.fr/actions/lemon/>

³ <https://isif.org/evaluation-techniques-uncertainty-representation-working-group>

modalities. The tutorial offers a synthesis of different results from various tasks carried out within those project's time frameworks and contexts. Main contributors are from ONERA, France, University of Paris Nanterre, Nanterre, France, University Paul Sabatier, Toulouse, France and Thales TRT, France.

STRUCTURE

The tutorial will include three main presentations of 30 minutes (1h30 for the entire tutorial) and additionally 30 minutes for questions and answers.

Presentations:

- Trust and reliability on social platforms (30 minutes)
- Facts, opinions and uncertainties in social data (30 minutes)
- Upcoming trends for social data analysis (30 minutes)
- Questions & Answers (30 minutes)

The tutorial can be run in physical, but also virtual or hybrid ways if needed, by using ZOOM or similar platforms and tools.

CHAIR / CO-CHAIRS

Valentina Dragos is a research scientist working for ONERA, the French Aerospace Lab in Palaiseau, France. She contributes to the analysis of online content with semantic approaches and she currently coordinates the FLYER project, addressing the spread of extremist ideas and messages on social platforms.

Main publications on this topic:

[1] Dragos, V., Besombes, J., & Mascaro, A. (2020, July). *Trend analysis in online data with unsupervised classification and appraisal categories*. In *2020 IEEE 23rd International Conference on Information Fusion (FUSION)* (pp. 1-8). IEEE.

[2] Dragos, V., Forrester, B., & Rein, K. (2020, July). *Is hybrid AI suited for hybrid threats? Insights from social media analysis*. In *2020 IEEE 23rd International Conference on Information Fusion (FUSION)* (pp. 1-7). IEEE.

[3] Dragos, V., Dezert, J., & Rein, K. (2019, July). *Assessment of Trust in Opportunistic Reporting using Belief Functions*. In *2019 22th International Conference on Information Fusion (FUSION)* (pp. 1-8). IEEE.

Delphine Battistelli is professor in computational linguistics at Paris Nanterre University, France. She contributes to the analysis of online content with a focus on language registers notion and on commitment notion. She collaborates to the FLYER project. Main publications on this topic:

[1] Battistelli, D., Bruneau C., Dragos, V. (2020). Building a formal model for hate detection in French corpora. KES 2020: 2358-2365

[2] Dragos, V., Battistelli, D., Kellodjoue, E. (2020). A formal representation of appraisal categories for social data analysis. KES 2020: 928-937

[3] Mekki, J., Lecorvé, G., Battistelli, D., Béchet, N. (2021). TREMoLo-Tweets: A Multi-Label Corpus of French Tweets for Language Register Characterization. RANLP 2021: 950-958

Farah Benamara is Associate professor in Toulouse University in computer science (since 2005) and co-Group Leader of the MELODI team of IRIT focusing on natural language processing and knowledge representation. Farah Benamara is expert in pragmatic and

semantic models for automatic text understanding focusing on sentiment analysis, hate speech detection, intention detection, irony detection, discourse processing, corpus annotation, and linguistic resource creation. She is Lead PI of many ongoing projects related to hate speech detection (Stereotypes (<https://www.irit.fr/sterheotypes/>) and DesCartes NLP project (<https://www.cnrsatcreate.cnrs.fr/descartes/>), NLP-based crisis management from social media (INTACT (<http://www.institutnicod.org/valorisation/intact-detection-des-intentions-prediction-de-l-action/>)) and fact-checking from knowledge (The QualityOnto project). Main publications related to the tutorial topics:

[1] Diego Kozłowski, Elisa Lannelongue, Frédéric Saudemont, Farah Benamara, Alda Mari, Véronique Moriceau, Abdelmoumene Boumadane: A three-level classification of French tweets in ecological crises. *Inf. Process. Manag.* 57(5): 102284 (2020)

[2] Patricia Chiril, Véronique Moriceau, Farah Benamara, Alda Mari, Gloria Origgi, Marlène Coulomb-Gully: He said "who's gonna take care of your children when you are at ACL?": Reported Sexist Acts are Not Sexist. *ACL 2020*: 4055-4066

[3] Patricia Chiril, Endang Pamungkas, Farah Benamara, Viviana Patti and Véronique Moriceau. *Emotionally Informed Hate Speech Detection: A Multi-target Perspective. Cognitive Computation* (2021).

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