TRACK 17 - Using Artificial Intelligence to Exploit Satellite Data in Risk and Crisis Management

Modern Artificial Intelligence and Machine Learning algorithms are currently used to process a variety of heterogeneous information (e.g., texts, images, videos, sensor-retrieved measurements) extracting and inferencing knowledge in several domains.

Satellites are constantly monitoring our planet, retrieving measurements about earth, air and water. Thanks to international organizations and private companies working in the spatial domain, satellite products (images and metadata) are easily accessible nowadays. Satellites provide a global and detailed overview of an area of interest, with a slow update frequency (e.g., daily frequency). Compared to satellite data, in-situ data could be generated every second and include heterogeneous sources, including sensors as well as human-generated data (e.g. from social media). The combination of satellite and in-situ data, if properly exploited, can be used to improve risk and crisis management.

This track mainly addresses the application of Big Data, Artificial Intelligence and Machine Learning models for the extraction of valuable information from satellite generated data to support risk and crisis management. In particular, it addresses approaches related to prediction, detection, and tracking of emergencies through the usage of satellite information combined with in-situ data.

TRACK FORMAT

The co-chairs of this track plan to apply a selective and interactive review process. We plan a rebuttal phase to make authors and reviewers discuss and exchange comments on the paper to improve the quality of the accepted papers. We also plan to organize a discussion panel at the end of the presentation session to foster discussion about the open issues related to the use of satellite data for emergency prevention and
management. A report including all discussed issues and interactions between attendees will be edited and shared with all attendees.

The final goal is to build an ISCRAM community focused on machine learning based on the satellite images, combined with in-situ data, for emergency prevention and management.

**TRACK TOPICS**

Topics of interest for this track are related to the use of Big Data and/or Artificial Intelligence and/or Machine Learning algorithms and methods for the exploitation of satellite data, combined with in-situ data, for the extraction of valuable information, addressing risk and emergency management.

Possible topics of interest for this track include, but are not limited to, the following:

- Classification of satellite data for emergency and/or risk management
- Clustering of satellite data for emergency and/or risk management
- Machine learning algorithms applied to multimodal-data and for emergency and/or risk management
- Supervised and unsupervised satellite time series data analysis for emergency and/or risk management
- Hazard nowcast and forecast models based on the integration of earth observations, sensors data, and crowdsourced information
- Real-time spatial crisis data acquisition and processing (satellite images, flood maps, etc.)
- Application of artificial intelligence, deep learning, and semantic technologies in the following domains: disaster management, natural hazards, public safety, smart cities resilience, etc.

**TRACK CHAIRS**

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