Deep learning and artificial intelligence for remote sensing satellite image change detection and natural hazard damage assessment

Mots clés : Array

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Résumé du projet de recherche (Langue 1)

In this subject, we focus on machine learning for natural hazard monitoring with more emphasis on remote sensing satellite imagery accompanied with different sources of contexts (namely operators' feedbacks and social media data). We pay a particular attention to extensively consider deep learning and visual recognition methods in order to make them suitable to handle these types of data and their temporal evolution. The goal is to develop novel solutions to monitor different aspects of changes due to natural hazards and ultimately assist experts and operators getting observable facts for better crisis management and rescue organization. However, most of the standard visual recognition paradigms (in particular those based on pure visual-contents) are reaching their limitation, as they are powerless to sufficiently close the semantic gap and also to leverage different sources of contexts that coexist with contents (such as subjectivity and feedbacks of operators, the huge mass of information in social media, etc.). The goal of this subject is to go beyond pure content-based solutions and to support visual natural hazard monitoring with new machine learning methodologies and algorithms (particularly deep learning ones) that thoroughly integrate different sources of contexts (see the detailed description in the attached document).