Special Session on Indexing, Retrieval, Annotation and Mining in Earth Observation (IR4EO)
Call for papers

Important dates

Paper submission: May 18, 2018
Notification of acceptance: June 29, 2018
Camera-ready papers due: July 13, 2018

Organizers

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- **Josiane Mothe**, Univ. Toulouse, IRIT-CNRS, Josiane.Mothe@irit.fr

Call for papers

The proliferation of Earth Observation (EO) satellites, together with their continuously increasing performances, provides today a massive amount of geospatial data. Analysis and exploration of such data leads to various applications, from agricultural monitoring to crisis management and global security. However, they also raise very challenging problems, e.g. dealing with extremely large and real time geospatial data, user-friendly querying and retrieval satellite images or mosaics, semantic indexing and annotation. The purpose of this special session is to address these challenges, and to allow researchers from multimedia retrieval and remote sensing to meet and share their experiences in order to build the remote sensing retrieval systems of tomorrow.

This special session aims to establish connections between researchers from multimedia retrieval and issues raised in remote sensing, and to provide interesting problems to the former while providing solutions for the latter. On the one hand, geospatial data requires specific models of description, with characteristics very different from other domains. To name a few, remotely sensed images are not necessarily defined in usual colour spaces, they compose large-scale mosaics enabling a continuous global cover of the Earth, they can be analysed and understood at various scales, etc. On the other hand, the multimedia retrieval community propose many scalable algorithms for learning, searching, or classifying data in a more generalist way. This special session will be a very interesting opportunity for multimedia researchers to propose adaptations to geospatial data, and for remote sensing researchers to create new models compatible with retrieval algorithms, while offering a context where people from these two domains can meet and share their experiences.

EO is one of the major resources of visual data that still greatly lacks of efficient and effective methods for indexing and retrieval. Major challenges are faced since the geospatial data available worldwide is at the order of magnitude of ZettaBytes. Besides, thanks to the efforts of NASA in the USA and Copernicus program in Europe, satellite images provided free of charge to end-users represent several new TB every day. To ease the design of new solutions, the scientific community benefits from the availability of an increasing number of public benchmarks, such as: UC Merced Land Use Dataset, Brazilian Coffee Scenes Dataset, SAT-4 and SAT-6 airborne datasets, Sentinel-2 EuroSAT dataset, ISPRS 2D and 3D Semantic Labeling benchmark, ImageClef 2017 Remote Pilot task, IEEE Data Fusion Contest, Kaggle contests, etc. This is expected to ensure fair comparison of methods and to support the evolution of the state-of-the-art.

Topics of interest include (but are not limited to):

- Content and context-based indexing, search & retrieval of EO data
- Semantic annotation
- Deep Learning and CBIR of EO data
- Search and browsing on EO repositories
- Change detection and its applications,
- Near real time monitoring,
- Multimodal/multi-observations (sensors, dates, resolutions) analysis of EO data
- HCI issues in EO retrieval and browsing
- Evaluation of EO retrieval systems, benchmarks for EO indexing and retrieval tasks
- High-performance, large-scale indexing algorithms for EO data
- Data fusion
- Summarization and visualization of very large satellite image datasets
- Applications: deforestation detection, air pollution detection and prediction, climate change, monitoring of resources, from land cover to phenology, photosynthetic activity, etc.

Submissions should be sent via easychair and follow the IEEE format (see CBMI call). Each submission will be peer reviewed by at least 3 PC members (general PC and special session PC). The title of the submission should include "(SS on IR4EO)" to avoid misclassification.

Invited speakers

Begüm Demir is associate professor at the University of Trento (Italy). In 2017, she got an (ERC) Starting Grant with the project « BigEarth - Accurate and Scalable Processing of Big Data in Earth Observation ».

Session programme committee members

- **Erchan Aptoula**, Gebze Technical Univ., Istanbul, Turkey
- **Alexandre Benoit**, Univ. Savoie Mont Blanc
- **Piero Boccardo**, Politecnico di Torino, Ithaca
- **Fabio Del Frate**, Univ. di Roma Tor Vergata, Italy
- **Fabio Dell'Acqua**, Univ. of Pavia, Italy
- **Begüm Demir**, Univ. of Trento, Italy
- **Jefferson Dos Santos**, Univ. Federal de Minas Gerais, Brazil
- **Mathieu Roche**, CIRAD
- **Sergi Trilles Oliver**, Univ. Jaume I, Spain

Since the Remote Sensing journal has an open call for a special issue on these topics with a deadline of 30th of September, the best papers from the special session will be encouraged to submit an extended journal version to this special issue. The selection of the papers will be eased by the fact that one of the special session organizers is also the leading guest editor of the special issue.