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PhD in Computer Science and Mathematics – XXXIV cycle

Change detection in remote sensing

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Abstract: Technological innovation in recent years has made available various sources of satellite and aerial images. Nowdays satellite imagery and other geo-spatial data provide a veritable big data problem, whose size and complexity requires more advanced tools than the traditional ones. The PhD research will try to extract high quality information from the available data. In particular we look for new change detection strategy, by using a holistic combination of statistical, numerical and spatio-temporal data mining methods.

Industrial partner

planetek italia

Planetek Italia S.r.l. is a company whose headquarters is in Bari (Italy). They provide solutions to exploit the value of geospatial data through all phases of data life cycle from acquisition, management up to analysis and sharing.

Within this PhD research, Planetek is providing knowledge, documents and data about the contexts addressed by the research and experimentation activities

International partner

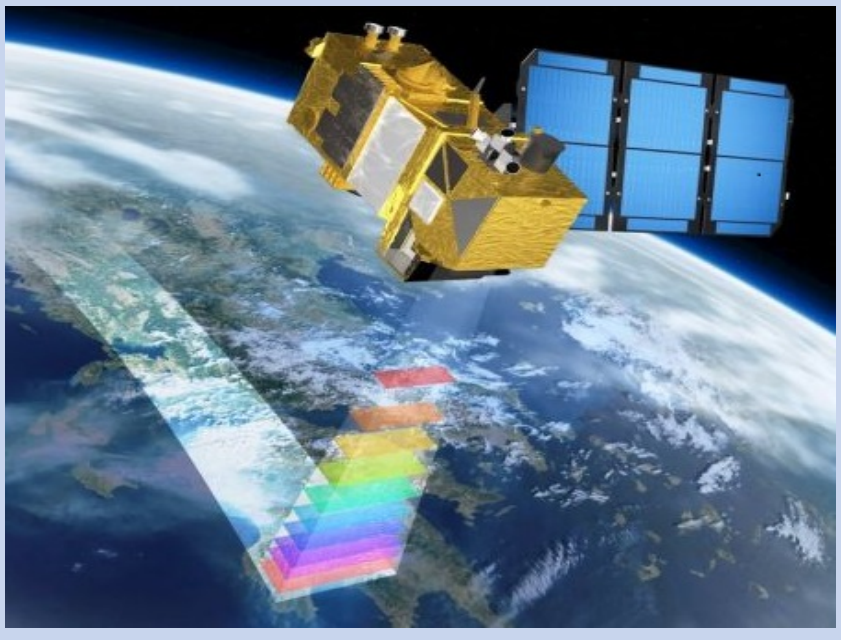
irstea
TETIS lab.
Department of Information System

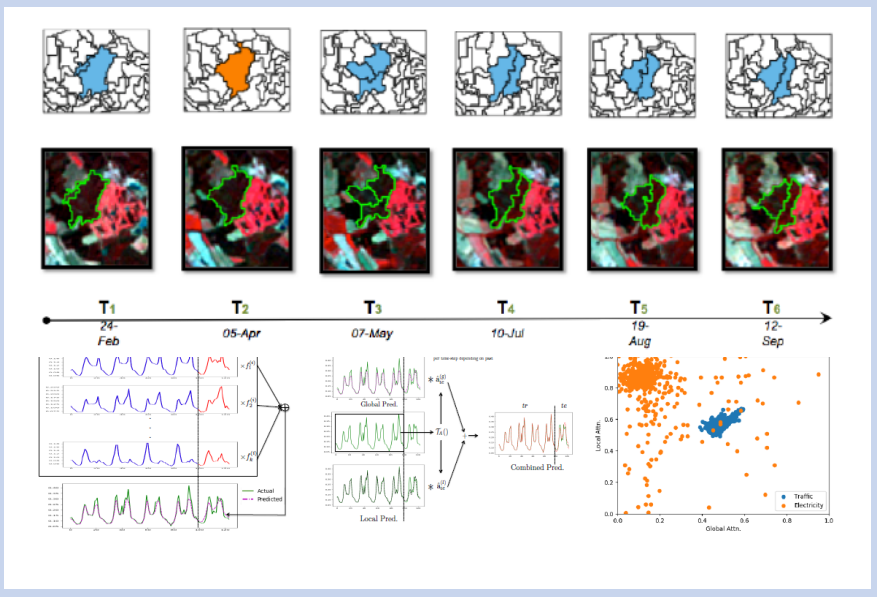
The TETIS lab at Montpellier (France) is a laboratory of IRSTEA which conducts methodological studies concerning spatial and temporal information management with particular attention to satellite images.

Within the PhD research, TETIS lab will provide expertise about the most recent data mining and machine learning developments in the analysis of satellite images.

Description of Activities

The research investigates the problem of changes detection in spatial and spatio-temporal data acquired with remote sensing techniques by focusing also on the analysis of correlation in time series data with innovative statistical models. Statistical methods will be also compared with the emerging deep mining approaches.





The analysis of the correlation of data has been deeply investigated in statistic. Recently the use of the "copula" methodology has yielded significant improvements on the classical statistical approaches. Some experiments applying this technique to spatio-temporal data have achieved very interesting and innovative results.

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