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Cascade Model for the Hierarchical Joint Classification

presented by

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ABSTRACT: Nowadays the capabilities to monitor the Earth's surface, notably agricultural, urban and built-up areas are becoming increasingly important for both civilian and military applications. Within this framework, accurate and time-efficient classification methods are crucial tools required to support the rapid and reliable assessment of ground changes and damages induced for example by a natural disaster, in particular when an extensive area has been affected. Given the substantial amount and variety of data currently available from the last generation of very-high resolution (VHR) satellite missions, the main methodological difficulty is to develop classifiers that are powerful and flexible enough to utilize the benefits of multi-band, multi-resolution, multi-date, and possibly multi-sensor imagery.

In this talk, first, a brief introduction to MRF will be given, and then a family of novel cascade techniques based on the marginal posterior modes (MPM) criterion will be described. The developed cascade methods have been experimentally validated with complex optical multi-spectral (Pleiades), X-band SAR (COSMO-Skymed), and C-band SAR (RadarSat-2) data after Haiti earthquake. The experimental results show that the cascade methods are able to provide accurate classification maps from heterogeneous remote sensing data.

KEY WORDS: Image analysis; Earth observation; Land cover; Data fusion; Stochastic geometry

Invited and animated by:

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Research results

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