

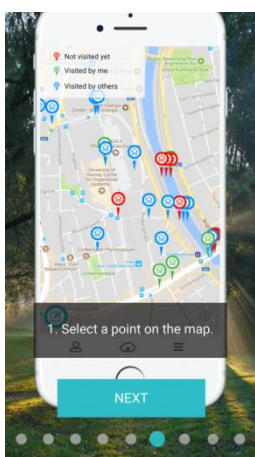
Land Use/Land Cover data update based on a multi-source data fusion approach

Integration of semantic, spatial and multi-source related heterogeneities

Postdoc position at the French National Mapping Agency (IGN-France, Paris), LaSTIG Research Laboratory - 12 months duration

Context

This postdoc position is part of the EU Horizon2020 LandSense project (<https://lep.landsense.eu/>). The project aims at building a citizen observatory for land use and land cover (LULC) monitoring integrating different types of data in particular citizens-contributed data and proposing a set of services (e.g. data quality assurance, change detection). In this context, one goal of IGN-France is to assess the potential of citizen-contributed data to improve and update LULC authoritative databases (e.g., the Very High resolution National Topographic Geodatabase OCS-GE). To reach this goal, IGN-France released three collaborative editing tools named: Web (<https://paysages.ign.fr/>), mobile (Android and Apple stores: PAYSAGES France) and wiki (<https://paysages.ign.fr/fr.wiki/fr/index.php/Accueil>). They aim is to collect data from citizens and different local authorities regarding changes in LULC information. The next step is to assess the quality of collected data and to integrate a consolidated output into authoritative LULC (OCS-GE).

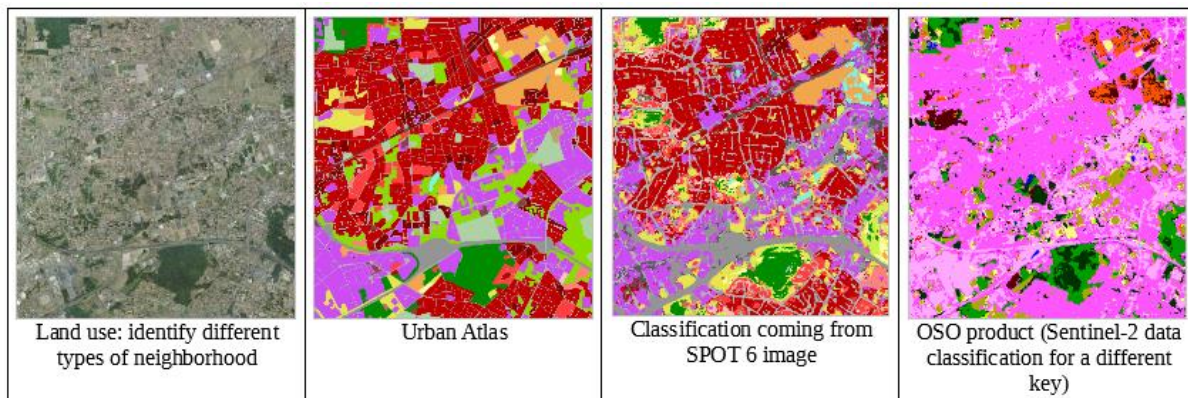


Goals and tasks

The research topic consists in defining an automatic process for LULC update by using heterogeneous multi-source data. Heterogeneity concerns the geometry (different formats), semantic information (different nomenclatures), spatial and thematic discrepancies due to scale and degrees of generalization, as well as different data production processes. The multi-source data fusion scheme will make possible to detect true relevant changes and to produce a new version of LULC data, to which it will be necessary to associate a measure of confidence based on these different characteristics.

More precisely, the main issue concerns the optimal use of these complementary data sources in order to:

- Develop automated methods to determine meaningful changes in LULC and whether they are valuable in the context of updating authoritative databases as well as for thematic applications (e.g. planning, ecology) by using multi-source data fusion skills.
- Propose a workflow to translate the valuable changes in the OCS-GE data model to update it.
- Propose an approach to specify changes in LU for example by defining landscape indicators.



For example, the available data sources are:

- Authoritative topographic data.
- Citizen-contributed data coming from PAYSAGES tools.
- Available LULC data such as Corine Land Cover, Urban Atlas, Theia OSO product.
- Satellite (Sentinel, Spot-6, Pleiades, etc.) or aerial images, possibly with land cover, use or small-scale changes already identified with automatic image analysis methods.

Expected profile and skills

- PhD thesis in Geographic Information Sciences or in Computer Science with interest in remote sensing and geographic information.
- Strong programming skills are required.
- Multi-source heterogeneous data fusion skills as well as classification knowledge, especially for remote sensing images will be appreciated.
- Motivation for teamwork, initiative, editorial ability, good level in English.

Location

The post-doctorat, granted by EU H2020 LandSense project (N° 689812) will take place at LaSTIG Research Laboratory in IGN-France (Paris) for a 12 months duration starting in December 2018 or January 2019.

The researcher will join the COGIT (<http://recherche.ign.fr/labos/cogit/english/accueilCOGIT.php>) and MATIS (http://recherche.ign.fr/labos/matis/accueilMATIS_en.php) teams.

Application

To apply, please submit a CV, a motivation letter, a link to the PhD thesis and main publications to:

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Laurence Jolivet, mail: laurence.jolivet@ign.fr

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