Geospatial intelligence and visual classification of environmentally observed species in the Future Internet

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The rapid development of advanced smart communication tools with good quality and resolution video cameras, audio and GPS devices in the last few years shall lead to profound impacts on the way future environmental observations are conducted and accessed by communities. The resulting large scale interconnections of these "Future Internet Things" form a large environmental sensing network which will generate large volumes of quality environmental observations and at highly localised spatial scales. This enablement in environmental sensing at local scales will be of great importance to contribute in the study of fauna and flora in the near future, particularly on the effect of climate change on biodiversity in various regions of Europe and beyond. The Future Internet could also potentially become the de facto information space to provide participative real-time sensing by communities and improve our situation awarness of the effect of climate on local environments. In the ENVIROFI(2011-2013) Usage Area project in the FP7 FI-PPP programme, a set of requirements for specific (and generic) enablers is achieved with the potential establishement of participating community observatories of the future. In particular, the specific enablement of interest concerns the building of future interoperable services for the management of environmental data intelligently with tagged contextual geo-spatial information generated by multiple operators in communities (Using smart phones). The classification of observed species in the resulting images is achieved with structured data pre-processing, semantic enrichement using contextual geospatial information, and high level fusion with controlled uncertainty estimations. The returned identification of species is further improved using future ground truth corrections and learning by the specific enablers.

References:

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