Mapping Urban Vegetation along City Streets

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Abstract

Rapid urbanization brings a lot of environmental challenges and problems which need to be addressed in order to safeguard quality of urban environment. Some of those challenges and problems include: ambient air and noise pollution, traffic jams, industrialization, inadequate waste management, as well as degradation of urban green areas. Urban green areas (vegetation) are among the most important parts of urban environment as they provide ecological, social, health and economic value and benefit all city dwellers. Therefore, monitoring vegetation health and change is important for development of any city. Remote sensing was identified as an effective tool for monitoring and mapping vegetation in large areas, but in the urban areas it is often not sufficient. In order to effectively monitor and map urban vegetation on a small scale, we need a more effective and usable tool. In this presentation, we demonstrate monitoring and mapping urban vegetation using georeferenced video captured with modified consumer-grade video camera. The camera was modified by replacing the standard lens with a special lens in order to obtain blue, green and near-infrared channel. Combining GNSS data with video allows us to calculate several vegetation indices at any point in time during recording. Subsequently, imagery is extracted from the georeferenced video and processed using procedures similar to those applied to satellite images, but with much higher resolution. This presentation explains advantages and disadvantages of this approach, as well as future possibilities concerning this technique.

Keywords: urban vegetation, vegetation index, georeferenced video, mapping