



HAL
open science

A Spectral Database for the Recognition of Urban Objects in Kaunas City: Performance and Morphometric Issues

Sébastien Gadal, Gintautas Mozgeris, Donatas Jonikavicius, Jūratė Kamičaitytė, Walid Ouerghemmi

► To cite this version:

Sébastien Gadal, Gintautas Mozgeris, Donatas Jonikavicius, Jūratė Kamičaitytė, Walid Ouerghemmi. A Spectral Database for the Recognition of Urban Objects in Kaunas City: Performance and Morphometric Issues. Sandra Krikstanaviciute. Advanced Construction Architecture: Raw Materials and Circular Economy in the Built Environment, Sep 2020, Kaunas, Lithuania. Kaunas University of Technology, pp.71-72, 2020, 10.5557/e01.2669-1922.2020 . hal-02951336

HAL Id: hal-02951336

<https://hal.science/hal-02951336>

Submitted on 28 Sep 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Copyright



A Spectral Database for the Recognition of Urban Objects in Kaunas City: Performance and Morphometric Issues

ADVANCED CONSTRUCTION AND ARCHITECTURE 2020
 Raw Materials and Circular Economy in the Built Environment
 September 23-25, 2020, Kaunas, Lithuania
 Kaunas University of Technology

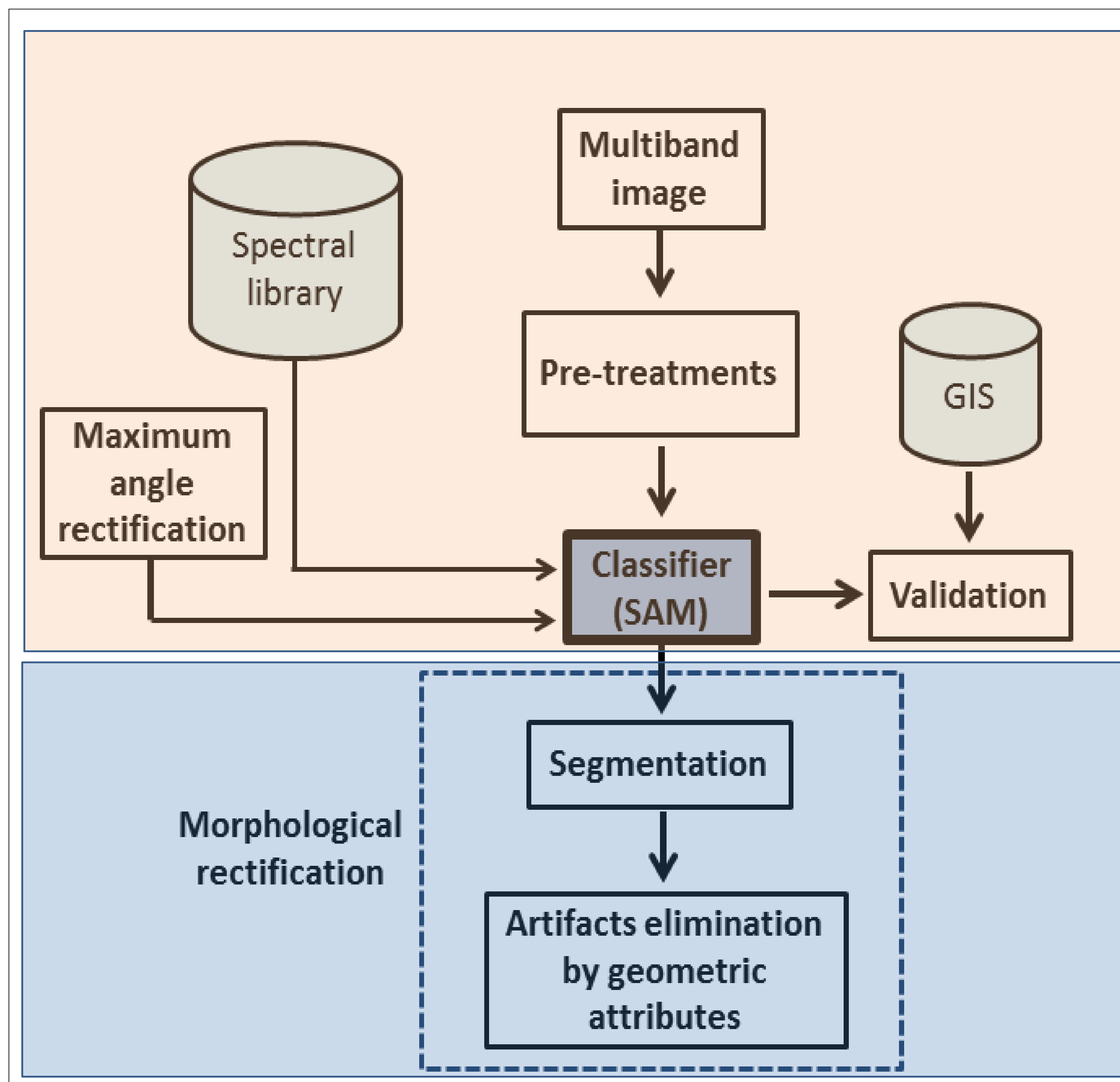
Sébastien Gadal^{1,2}, Gintautas Mozgeris³, Donatas Jonikavicius³, Jurate Kamicaityte⁴, Walid Ouerghemmi¹

¹Aix-Marseille Université, CNRS ESPACE UMR 7300, ²North Eastern Federal University, ³Vytautas Magnus University, ⁴Kaunas University of Technology, sebastien.gadal@univ-amu.fr

- The diversity of urban materials of Kaunas city, contemporary and historical urban structures, urban planning peculiarities and spatial complexity characteristic to post-Soviet Baltic cities permitted the development of a "broad spectrum" object-oriented spectral database made with a Themis Vision hyperspectral Vis-NIR sensor in laboratory on some common roofing's materials.

Key conclusions:

- The results obtained on the recognition and characterization of urban materials and buildings are substantial.
- The performance of the recognition of built-up areas is improved with the use of the morphometric urban object database.
- Using the urban objects spectral library in another city is possible after adaptation of the morphological rules to the specific city's structures.



Urban objects classification by spectral library and morphological rectification of multiband image.

Spectral classification by spectral library of (a) residential zone, (b) industrial zone, and (c) historical center of Kaunas city.