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Archives
Volumes
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Title and Author Search
Annals
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ISPRS Journal Geo-Info
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Brochure
ISPRS Profile
Annual Reports
Related Publications
Booklets

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GROUND OBJECT RECOGNITION USING COMBINED HIGH RESOLUTION AIRBORNE IMAGES AND DSM

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Abstract. The research is carried on dataset Vaihingen acquired from ISPRS Test Project on Urban Classification and 3D Building Reconstruction. Four different types of ground objects are extracted: buildings, trees, vegetation (grass and low bushes) and road. Spectral information is used to classify the images and then a refinement process is carried out using DSM. A novel method called Sparse Representation is introduced to extract ground objects from airborne images. For each pixel we extract its spectral vector and solve Basis Pursuit problem using l1 minimization. The classification of the pixel is same as the column vector of observation matrix corresponding to the largest positive component of the solution vector. A refinement procedure based on elevation histogram is carried on to improve the coarse classification due to misclassification of trees/vegetation and buildings/road.

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