

post-classification refinement (OBPR) to enhance the accuracy of land use and land cover

(LULC) mapping using remote sensing data. The method integrates deep learning and

object-based image analysis (OBIA) to obtain improved classification maps.

**\*\*Key Findings:\*\***

\* The proposed OBPR-CNN method outperforms conventional OBIA methods and achieves

high overall accuracy (OA) in classifying LULC.

\* The combination of optical and synthetic aperture radar (SAR) data contributes to improved

classification results, with SAR data being particularly useful for distinguishing urban LULC

categories.

\* Spatial information extracted by convolutional neural networks (CNNs) is crucial for LULC

mapping, while hand-crafted gray-level co-occurrence matrix (GLCM) textures are less

important.

\* The OBPR strategy effectively reduces salt-and-pepper effects and retains object boundaries,

resulting in compact and accurate classification maps.

**\*\*Significance:\*\***

\* The study demonstrates the effectiveness of OBPR in improving LULC classification accuracy, especially for urban and complex landscapes.

\* It highlights the importance of spatial information and the integration of deep learning and OBIA for LULC mapping.

\* The findings provide insights into the complementary roles of optical and SAR data in LULC classification and the limitations of traditional GLCM textures.

\* The proposed method offers a valuable approach for researchers and practitioners working on LULC mapping using remote sensing data.