**Segmentation Quality Analysis Using Segment Anything Model (SAM) in Very High-Resolution Imagery**

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***ABSTRACT***

With the widespread use of artificial intelligence (AI) in many fields, automatic information extraction from satellite images continues to be among the trending topics. Segment Anything Model (SAM) is one of the important developments that has become very popular in this field. In this study, it is aimed to apply the SAM method to high-resolution images with heterogeneous classes and to investigate the quality of the object boundaries obtained. As the application area of ​​the study, the Pleidas satellite image of the selected area in Bergama district of Izmir was used. There are different classes in the region, coniferous forests, areas consisting of buildings, roads, fruit trees, and bare land. The boundaries of the obtained objects were analyzed with Over-segmentation (OS), Under-segmentation (US), Area fit index (AFI), and Quality rate (QR), which are parameters that measure segmentation quality. In the numerical analysis, the results obtained with SAM were examined comparatively with the results of the MRS algorithm, which is one of the methods on which the OBIA algorithm is based. In this context, the SAM algorithm showed superiority in the parameters used to measure segmentation quality compared to the multi-resolution segmentation (MRS) algorithm in classes such as single tree and road class, and significant findings were obtained regarding the automatic determination of object boundaries. In this way, a comparative study is presented on the effect of the use of SAM and the widespread use of AI in different band combinations in high-resolution satellite images.

**Keywords:** Segment Anything Model (SAM), Segmentation, Quality