

## AI-Assisted Generation of Datasets from Drone Imagery for Green Spaces

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### Abstract

Artificial intelligence (AI) offers revolutionary innovations across various domains and has begun to play a significant role in the planning and management of green spaces. Due to their complex and multifaceted nature, urban green spaces can benefit greatly from AI's capabilities in data analysis and prediction, resource management, sensor integration, real-time monitoring, remote sensing and image processing, planning and decision support systems, as well as cost optimization. This study focuses on the creation and annotation of visual datasets required for AI applications in landscape architecture. High-resolution images captured at different altitudes using drone technology within a selected green space in Konya (Türkiye) enable the digital classification of vegetated areas. During the data processing and annotation stages, modern labeling and dataset development tools such as Roboflow, Labelbox, and Orange are employed to segment vegetation types (trees, shrubs, groundcovers, etc.) and turfgrass. The resulting annotated datasets are organized into standardized formats suitable for training deep learning algorithms (e.g., YOLOv8, U-Net) and provide a foundation for the advancement of digitization, green space management, and decision support systems in the field of landscape architecture. This study also highlights the technical and methodological challenges encountered during data collection and labeling and discusses how AI-based decision support systems can be integrated into sustainable landscape design processes. The findings aim to contribute to more effective and evidence-based design approaches, particularly in spatial analysis and green space management. Thus, the research demonstrates how data-driven approaches can be used in landscape architecture and provides a reference framework for future modeling and automation studies.

**Key Words:** *Landscape Architecture, Artificial Intelligence, Green Spaces, Image Processing, Data Annotation*