

Effective automatic AI model to identify tree species using phone imagery.

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Precision forest management and biodiversity require species-level information. Accurately predicting tree species with images can save time and money during forest inventory. Identifying tree species is a time-consuming and challenging task during fieldwork. Comprehensive studies have applied traditional image engineering techniques and state-of-the-art deep learning models for identifying tree species, but these models are built on bark images so their models, limiting their applicability to clear and local tree trunk features, which is not convenient for real-life application. To address this gap, I built a tree image dataset with 6474 images for 39 species that include tree trunks at different distances, perspectives, and light conditions. I used YOLOv8 as a pre-trained model to train a tree detection model with 39 species achieving an accuracy of 0.91. To improve classification accuracy, I am working on training a classification model with bark images generated using SAM and analyzing the potential influences of light conditions for tree identification. The preliminary results of these efforts will be shared on the poster. The model developed from this study will be applied to smartphones or other mobile devices with a camera to automate tree species identification procedures.