Aerial Object Detection with Improved Models and Processes

This project aims to improve the accuracy and efficiency of object detection models for aerial imagery by re-implementing existing models and developing new processes. We will address the unique challenges of aerial imagery, such as variable lighting, scale, orientation, and spatial resolution.

Our approach involves creating an end-to-end pipeline for aerial object detection, from data preprocessing to model training and testing. We will evaluate state-of-the-art models, such as YOLO, Faster R-CNN, and SSD, and explore techniques like data augmentation, transfer learning, and region proposal methods.

We will test the performance of the system on publicly available aerial imagery datasets. The project aims to produce a guide for implementing object detection models and processes for aerial imagery and an open-source code repository for the proposed pipeline.

The primary goal is to create a more accurate and efficient system for object detection in aerial imagery, which will have various applications in the domain of remote sensing and beyond. We will measure the system's performance in terms of mAP, precision, recall, F1 score, and detection speed.