Green-to-Concrete Ratio

Team Members:
Dharani Ravanam
Teja Asritha Goli
Karthik Bommarthi

Green-to-Concrete Ratio
A Digital Approach to Green Coverage Assessment

The project aims to use AI techniques to measure the green (vegetation) and concrete (built-up) ratio in urban areas by processing and analyzing satellite or drone imagery.

Objective

This project aims to use AI image processing to analyze satellite or drone images and determine the green-to-concrete ratio in urban areas. We will identify and classify areas of vegetation and concrete, calculate their ratio for urban planning, and develop a method that can be easily applied to assess green spaces in cities.

Approach & Intended tools and techniques

- **Collect Data:** Obtain high-resolution satellite and drone images of urban areas.
- **Process Images:** Use OpenCV for image enhancement to make the features clearer for analysis.
- **Apply AI Techniques:** Implement a CNN, specifically using a UNet architecture, which is well-suited for segmentation tasks like distinguishing vegetation from concrete in images.
- **Use Tools:** Python for scripting, TensorFlow or PyTorch for model training, and Matplotlib for visualizing results.

Deliverables

1.Trained Model: A model that accurately classifies green and concrete areas in images.
2.Code Repository: A collection of scripts for data processing, model training, and analysis. This ensures reproducibility and transparency.
3.Visual Outputs: Graphs and maps that illustrate the green-to-concrete ratios across the analyzed urban areas.

Evaluation Methodology

- **Model Accuracy**: Measure precision and recall to assess classification performance.
- **Ratio Verification**: Compare calculated ratios with verified data. This will validate the model's practical utility.
- **Visual Review**: Check that visual outputs accurately represent the data. This final review ensures that stakeholders receive clear and reliable insights for urban planning.

Thank you