

Data Science

TASK-01

Computer vision algorithms can be used to detect and identify objects of interest in the images, such as houses, cars and crop cultivations.

Normally this technology is used in satellite technology to count the houses related to a particular area especially for purposes like Urban Planning and Development, Disaster Response and Recovery, and Real Estate and Property Management.

Model1: Using yolov5 model to detect the houses in a given area.

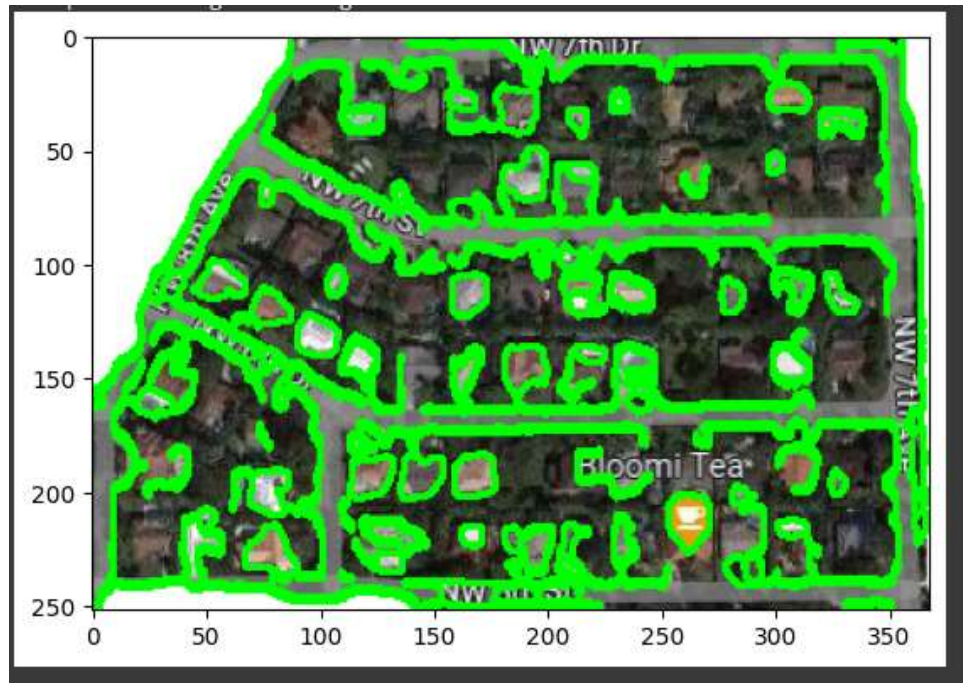
- Collected some images from google maps and categorized them into two different folders accordingly test and validation data.
- I used 40 images for train and 12 images for validation dataset. Then using the makesense.ai tool I annotated the images.
- Then I created a YAML file to define the custom model configuration.
- Then I Used the train.py script from the YOLOv5 repository to train the custom model.
- After that trained the YOLOv5s model on the custom dataset for 50 epochs with a batch size of 2.



Detected image

Model 2: Using image processing pipeline in Python using the OpenCV library to count the number of houses.

- Used a simple image processing pipeline to identify and count the number of houses in the given image using edge detection and contour analysis.



Detected image

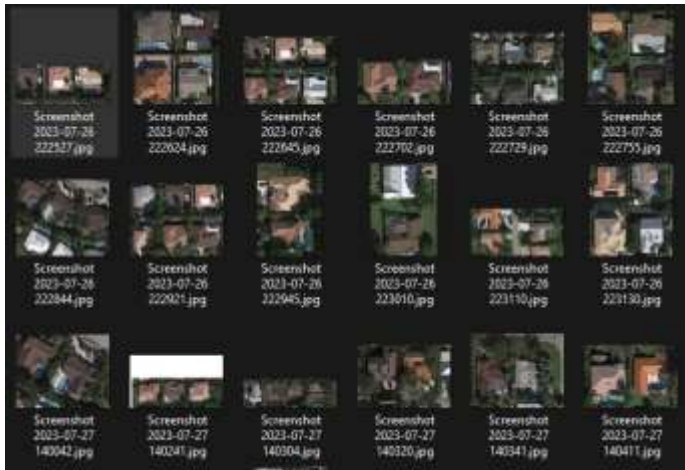
```
print('houses in the image: ', len(cnt))  
plt.show()
```

```
houses in the image: 63
```

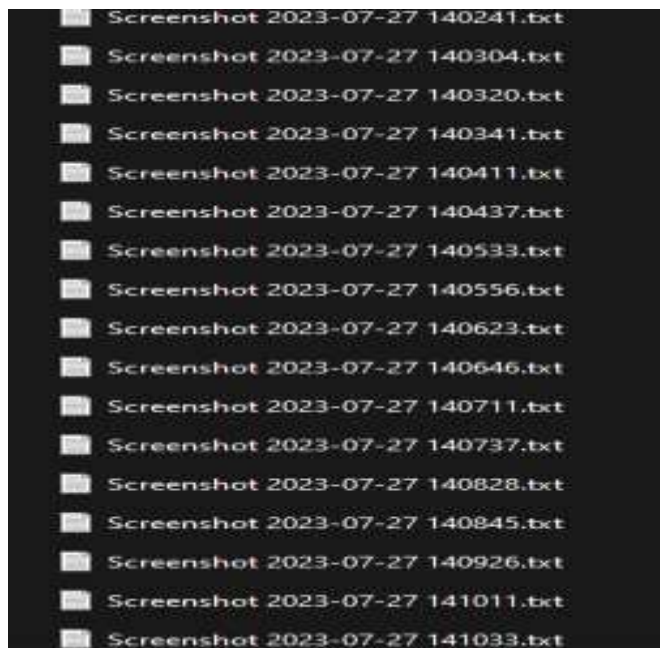
No of houses detected in the given region

Challenges I faced: - For the YOLOv5 model, It was difficult to find an annotated dataset of the satellite images of houses.

How I Overcame: I made a data set by taking photos in google maps and annotated them using makesense.ai tool.



Screenshot of the dataset I created



Annotated images dataset